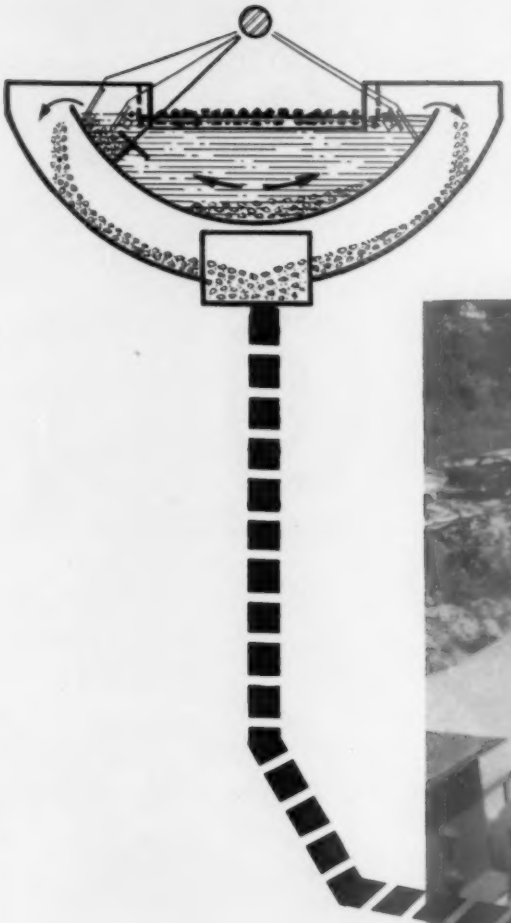
NOVEMBER · 1959

ROCK PRODUCTS



An industry first: HMS for crushed stone

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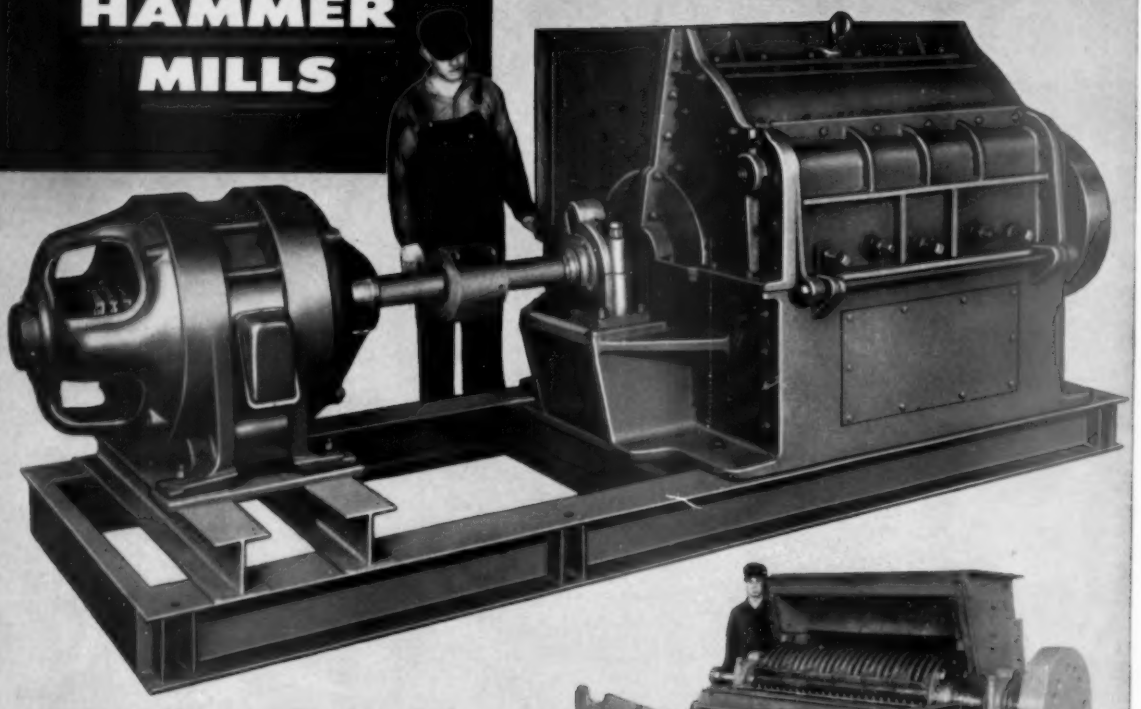
Lightweight aggregates come of age

page 82

WILLIAMS *heavy duty* HAMMER MILLS



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- **Reduces Production Costs Up To 50%**
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Williams No. 60 GA Mill with heavy duty steel plate frame. Cover has been opened to show heavy duty manganese steel liners, breaker plates, grate bars and hammers.

Whether your size reduction job involves crushing, grinding or shredding—whether the material is mineral, chemical, vegetable or animal—Williams has a hammer mill designed to *do it from start to finish in a single operation.* More uniform product, increased output, plus savings in time and labor can *cut production costs as much as half!*

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WILLIAMS PATENT CRUSHER & PULVERIZER CO.
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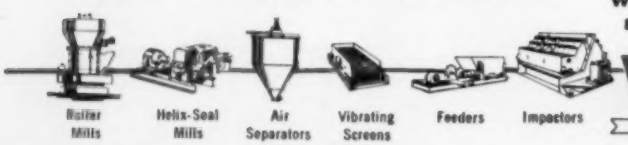

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5 series of belt conveyor idlers

end wasteful over and under-engineering

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15.101

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ROCK PRODUCTS

a Maclean-Hunter publication, Vol. 62, No. 11

November 1959

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B.F.Goodrich

This belt stands hot lime, has outlasted others 3 to 1

Hot lime, just dumped from the dryer, is on its way to a crusher via conveyor belt. But keeping this belt going used to be a problem. The high heat baked the rubber. Belts had to be repaired frequently; averaged only nine months' service before giving out entirely.

When a B.F.Goodrich distributor heard of the problem, he recommended a conveyor belt, called Solarflex, designed specifically for handling hot materials. This belt is made of a special rubber that stays soft and pliable at temperatures that cause other belts to harden, crack and finally break down.

The B.F.Goodrich Solarflex belt was installed, and after 27 months on the job is still going strong. Lime company officials say that the heat apparently hasn't bothered the belt, it is still as soft and pliable as when it was new. No repairs have been needed.

Instead of accepting the high cost of frequent replacements, this Ohio lime company made a smart move. They worked with a B.F.Goodrich distributor and got exactly what they needed to keep the plant running, cut maintenance costs, and get tripled belt life.

Your B.F.Goodrich distributor has full information on this hot-material conveyor belt. And, as a factory-trained specialist in rubber products, he can answer your questions about the many products B.F.Goodrich makes for industry. *B.F.Goodrich Industrial Products Co., Dept. M-735, Akron 18, Ohio.*

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Kaiser Engineers can help you decide

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OUTPUT

in digging that beats an ordinary rig to pieces!

BUILT AS A ROCK SHOVEL, it gives you the performance you expect of a *Rock Shovel.* This big 80-D Northwest is one of eight bought by Campbell Limestone Co., and it is loading out the tough stuff they dig at Pacolet, S.C. This is the kind of brutal digging that beats ordinary equipment to pieces. M.W. Carter, Superintendent at Pacolet, says, "Most satisfactory service. The 80-D averages over 300 tons an hour."

Northwests are built for Rock Work. Machinery Bases are rugged, heat treated alloy steel castings with cast machinery side frames. Realize what this means. It assures a lifetime of permanence of shaft alignment. It eliminates weaving that is the direct cause of wear. There is nothing else like it.

You can go through the whole machine—Booms!—Sturdier for workhorse digging and lifting. Uniform Pressure Swing Clutches!—cooler running, trouble-free. The Helical Gear Drive!—running in oil, mounted on anti-friction bearings free from the adjustments and stretching that comes with chain drives. The "Feather-Touch" Clutch Control!—with the *feel of the load* free from the complications of delicate mechanisms, valves, pumps and tubing. The Cushion Clutch, a wide range of Boom Hoist Equipment to choose from, Easy Convertibility—These and many more advantages give you a piece of equipment with ability that you can't find anywhere else for handling the workhorse jobs and making money.

If you are planning on new equipment there are many other Northwest advantages you should know about. Let a Northwest man fill in the details.

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135 South LaSalle Street, Chicago 3, Illinois

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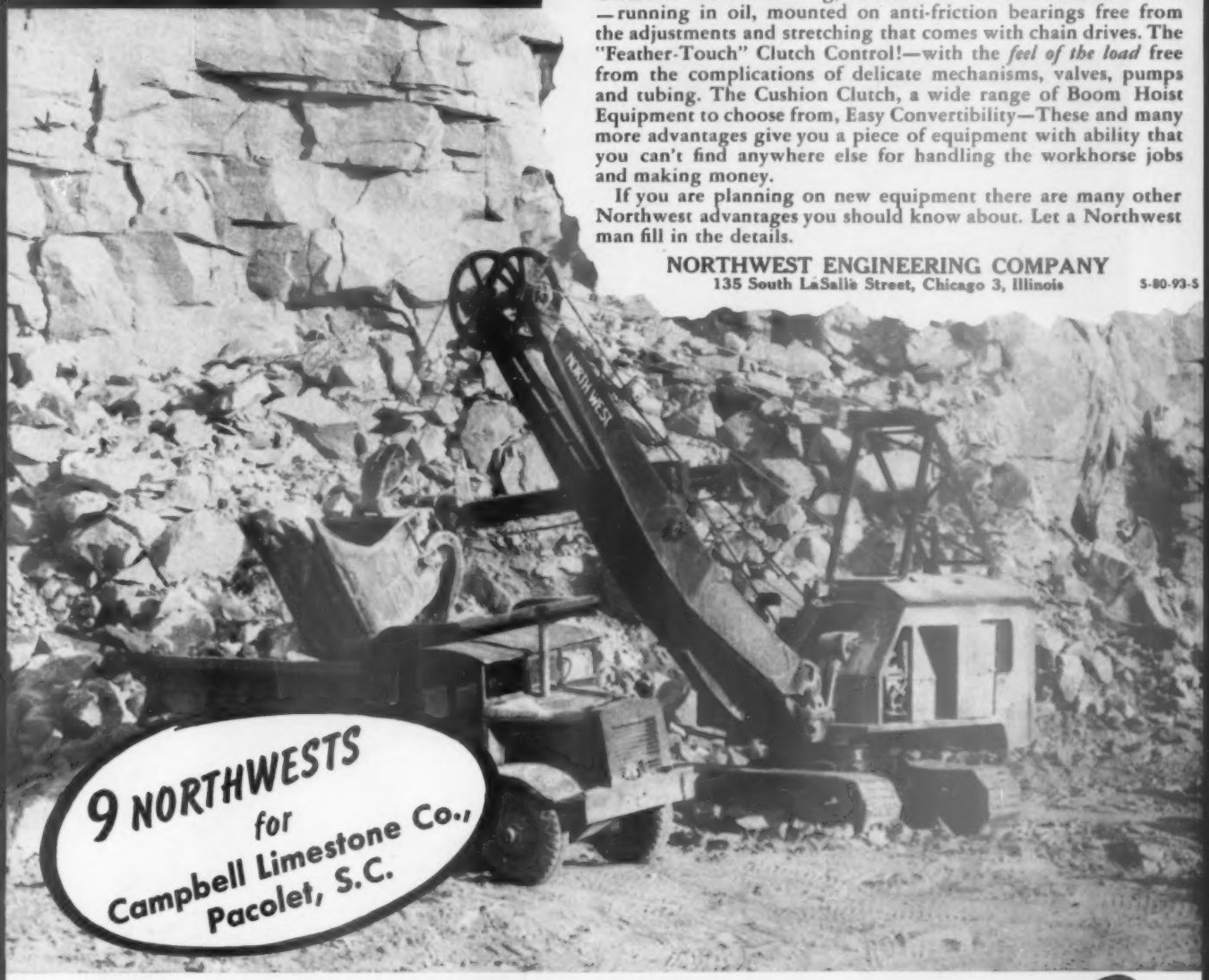

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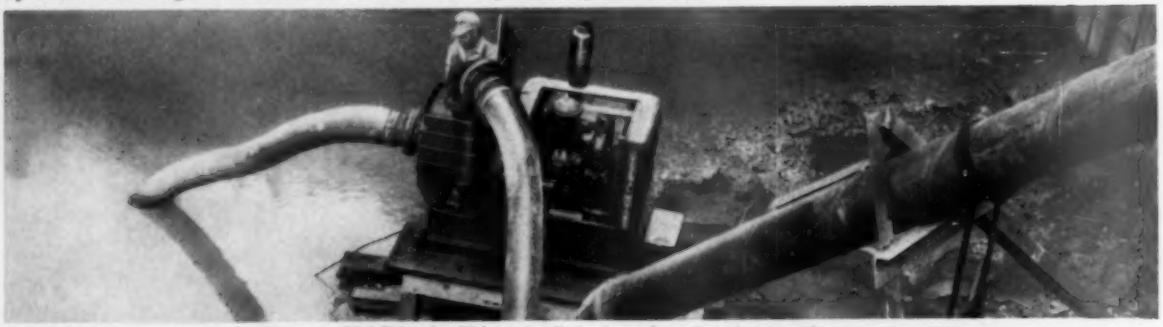
Now you can enjoy all the benefits of GM Diesel standardization in every type of equipment and still buy the best make of equipment on the market

GM Diesel engines are offered in more than 1800 applications of power equipment built by over 250 leading manufacturers—wider availability than any other Diesel



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Widest parts interchangeability pays off for fleet users in lower parts inventory requirements —for example, many parts for a 33 H.P. "Jimmy" Diesel fit a 1650 H.P. "Jimmy"

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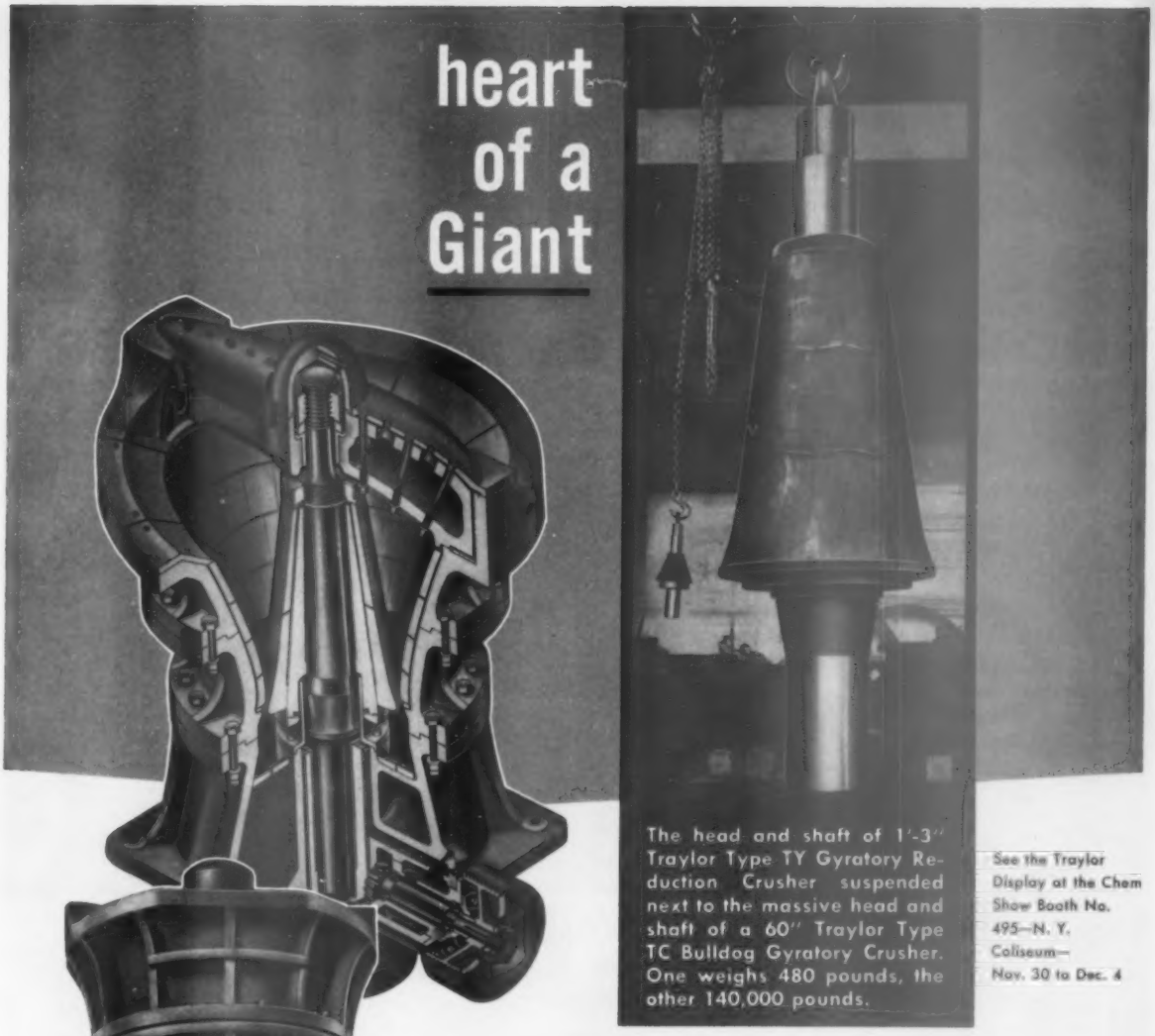
heart of a Giant



The head and shaft of 1'-3" Traylor Type TY Gyratory Reduction Crusher suspended next to the massive head and shaft of a 60" Traylor Type TC Bulldog Gyratory Crusher. One weighs 480 pounds, the other 140,000 pounds.

See the Traylor Display at the Chem Show Booth No. 495—N. Y. Coliseum—Nov. 30 to Dec. 4

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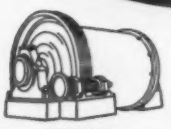
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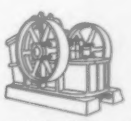
APRON FEEDERS

PRIMARY GYRATORY CRUSHERS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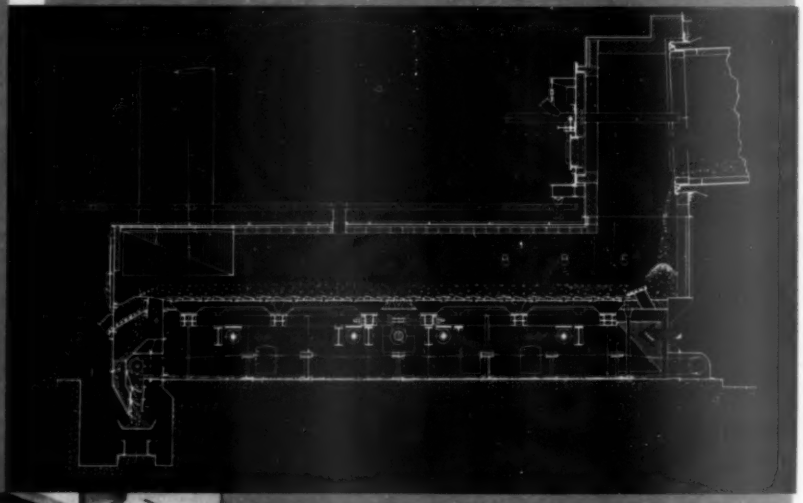

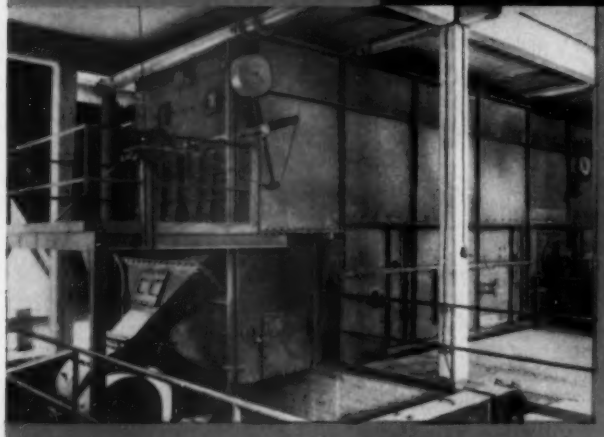

First Folax Horizontal Grate Cooler installed in 1947. Thoroughly proven design—more than 160 Folax Coolers sold and in operation.

- Extra heavy construction.
- Efficient cooling to low temperatures.
- Bulletin No. FC1059 on request.

F. L. SMIDTH & CO.

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WHAT'S HAPPENING

IN OTHER FIELDS OF INTEREST TO THE ROCK PRODUCTS INDUSTRY

November, 1959

The radio "crystal set" is still with us, but in a vastly refined and improved version. This time the crystal is a single, almost perfect, nearly pure crystal of iron. It will replace elements in microwave equipment which are heavier and far less efficient than the single crystal. Don't rush out to buy one as a replacement; for a while they will probably be available only for missile guidance systems. Eventually the new crystals will be offered by International Telephone & Telegraph Corp. for commercial microwave systems.

Electric energy has been harnessed to do blasting and crushing. A patent has been granted to cover a high-frequency, electromagnetic induction coil for fracturing rock. This process shows the most promise where the material to be broken has a tensile strength much less than its compressive strength —most common rock does. The energy needed to produce tensile failure is often as low as 15 percent of the energy to crush materials by conventional compression methods. To do blasting, a pancake induction loop can be passed close to the surface of the rock. A ⅜-in. diam., water-cooled copper tube transmits energy from a 25-kw., 5-megacycle generating unit to produce tensile failure cracks.

Machines will talk to machines in the automation of the future. Then it will be a major psychological problem for humans to understand the high-speed, arbitrary world of machines. This is the prediction of Dr. Allen V. Astin, National Bureau of Standards. We already have many of the electronic instruments which will be the basis for the automation of the future—instruments which will sense changes and "feed back" directions to the machines to compensate for the changes. In this way the machines will have certain types of decisions to make. Dr. Astin foresees the day when automatic data processing equipment will be the tie between manufacturing and marketing of many products.

Copper slag piles take on new glamor and interest with the announcement of a plan to recover iron values. Many of the unsightly mountains of copper smelter waste in the Southwest contain as much as 35-percent iron. Webb & Knapp, Inc., owns a 30-million-ton pile of material near Clarksdale, Ariz., which it plans to use as raw material for a 500 ton-per-day integrated steel mill. If their process proves economic, it may forecast the end of the century-old tailings piles from Arizona to Montana. About three tons of slag will be needed to make a ton of ingot, but the elimination of ore mining and transportation costs should make the finished steel highly competitive in the area.

Photosensitive plastics point to a revolution in photography and printing. Complete printing plates can be prepared using DuPont's ultraviolet sensitive Dycril. Exposed prints are processed in an alkaline bath; the finished print can be mounted and ready for the press in a matter of minutes. This material is still in the experimental stages, but it will probably not compete with another plastic which is sensitive to fluorescent light and is "developed" in boiling water.

Everybody's teeth will sparkle when silicone plastic coatings are available. Dental researchers at the University of Alabama are hot on the trail of silicone compounds which can be applied to teeth safely and inexpensively. If a durable, enzyme-resistant silicone resin is developed, human teeth decay may become a thing of the past. Polysiloxanes show the most promise, but a great deal of dental investigation must be done before the idea becomes available to the public.

The first highway in Greenland is under construction. This will be a 22-ft. right-of-way in the bottom of a 28 ft. deep trench cut into solid ice and snow of the icecap. To eliminate ventilation problems in the 100-mile tunnel, the army will use electric trucks. The Corps of Engineers has been experimenting with construction techniques to improve the livability and reduce the hazards for personnel and equipment. Coal-cutting machines have been found to be successful to excavate rooms and long tunnels in the icecap. However, ice flow from pressure, bands of debris and internal movements in the ice limit the depth and usefulness of tunnels.

How long since you had herb tea? A Canadian herb distributor is planning to crash the United States market with a concoction of dandelion and chicory roots blended with roasted rye and soy beans. Primary sales appeal will be as a healthful, caffeinless substitute for coffee. The dandelion roots are the same as those that flourish in everybody's lawns, except that these are imported from Belgium and processed in Canada.

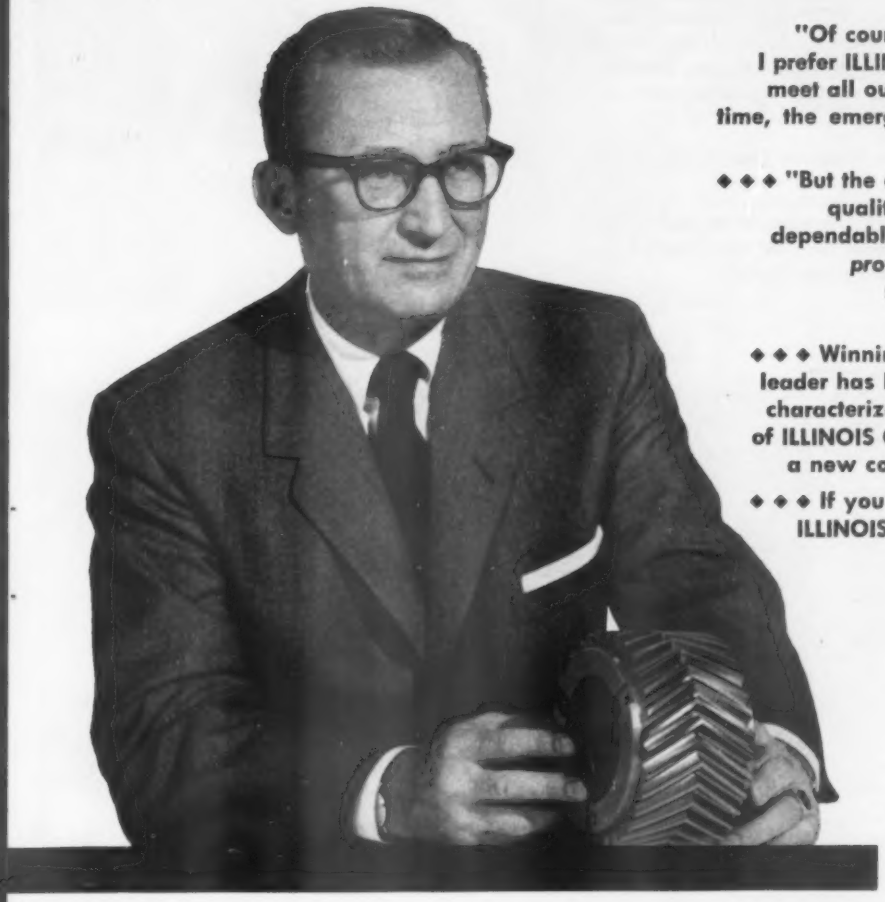
Gourmets may yet learn to appreciate what blast-furnace slag does for them. More than 20,000 tons of slag from Bethlehem Steel's Sparrows Point Plant were used to "pave" the bottom of Chesapeake Bay, providing a seed bed for this season's oyster hatch. It has been well known that oysters particularly appreciate blast-furnace slag, but this is the most extensive distribution of slag for this purpose.

A new system for applying plastic foam has been developed. Exceptional corrosion control and insulation value are possible with a new polyether-based urethane plastic foam. It is applied to industrial equipment and structures with specially-designed, portable spray equipment. Ten to 20 board-feet per minute can be applied up to 7 in. thick on vertical surfaces. With densities between 2 and 4 lb. per ft. and K-factor about .14, the foam is self-adhering and apparently sets to a rigid mass within 5 minutes.

The editors

WHY BUY ILLINOIS GEARS?

THE ANSWER IS QUALITY... EVERYTIME!

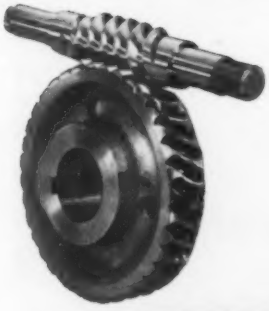


"Of course, there are many reasons why I prefer ILLINOIS GEARS. I like the way they meet all our specs, the way they deliver on time, the emergency service we get when we need it—to mention a few.

◆ ◆ ◆ "But the one thing I like most of all is the quality of ILLINOIS GEARS—enduring, dependable quality I can trust because it is *proven by performance* . . . one more reason why we feel they are our most economical buy."

◆ ◆ ◆ Winning this recognition as the quality leader has been rightfully earned because it characterizes every step in the manufacture of ILLINOIS GEARS—a creed that established a new concept of quality in gear making.

◆ ◆ ◆ If you are not now using or specifying ILLINOIS GEARS find out about the gears that are *made right with quality as the first consideration.*



Look for this mark ILL® *the symbol on finer gears*

Gears for Every Purpose ... one gear or 10,000 or more

ILLINOIS GEAR & MACHINE COMPANY

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4 more producers report:

How to protect profit margins at today's competitive prices

This year, crushed stone prices *dropped* 3½%, while overall construction costs climbed nearly 6% (EN-R price index, 20-city averages). One reason: With over 2200 crushed stone operations in the U.S. — and more and more contractor-producers entering the picture — price competition is keener than ever. Another reason: New cost-cutting machinery is rapidly replacing make-do equipment in the race for lower cost per ton.

The big question: What can you do to maintain *your* profits in the face of this toughened competition?

More and more of today's successful operators have found the answer in Lippmann crushing equipment, the *best they could buy, the lowest-cost to own.* Here are on-the-scene reports:

LIPPMANN FIELD REPORT

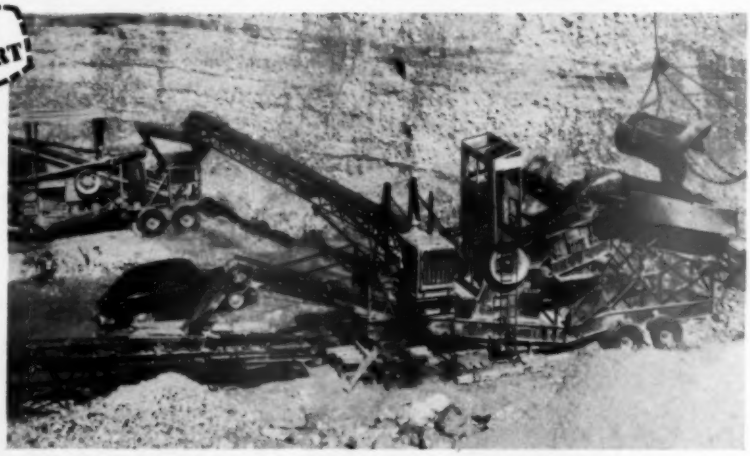
GOES WHERE THE PROFITS ARE

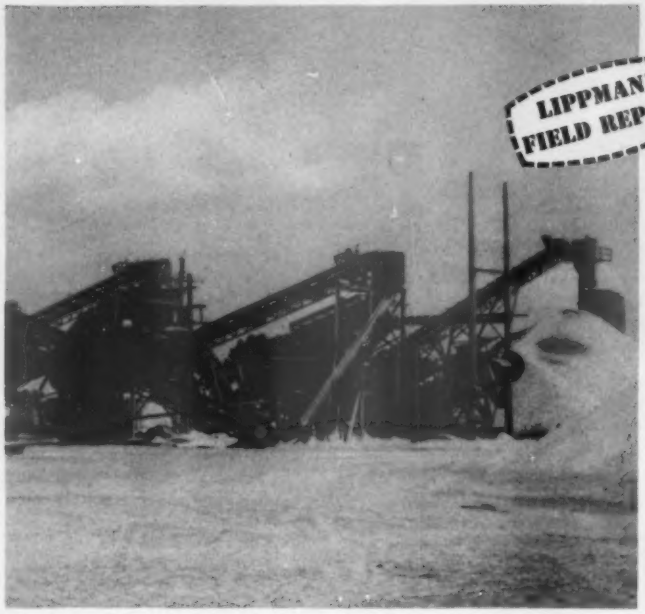
To handle scattered customers profitably, Oregon Stone Quarries works 3 to 4 different locations per season, using 24 x 36 Lippmann portable primary . . . reports 200 t.p.h. output, at 75 to 80% reduction, producing minus 4" stone. At same pit, Lippmann short-wheelbase portable conveyor builds 50 to 100% bigger stockpiles before repositioning is necessary. Based on 4 years profitable and maintenance-free performance, pit foreman J. Steinmetz states, "I don't think there's better portable equipment made."

LIPPMANN FIELD REPORT

HANDLES TOUGH MATERIAL PROFITABLY

To solve problem of high-granite-content rock, Road Materials Corp., Illinois, turned to 24 x 36 Grizzly-King portable plant. It was a smart move. Average output: 200 to 250 t.p.h., producing minus 4" at 40% reduction. Owner Arnold Melahn reports, "Performance of this crusher is very good . . . I have yet to see a rock this machine won't pass."





WORKS AROUND THE CLOCK ...NO DOWNTIME

Complete Lippmann plant shown here produces 4 grades of material simultaneously, is push-button controlled by one man. Operating as many as 3 shifts to keep up with demand, plant has had no downtime in 4 years. Using 10 x 24 Rock Ram jaw crusher as a primary, and with discharge opening set down to 1½", the plant produces 130 to 150 tons per hour. On basis of "excellent" all-around performance, owner recently placed repeat-order for Lippmann equipment at another pit.

INCREASES OUTPUT TO 3500 TONS DAILY

To keep pace with market demand, Schuster Construction Co. of Green Bay, Wisconsin, recently opened their second Lippmann-designed-and-equipped crushing plant. Using Lippmann primary and secondary crushers, classifier, screens and conveyors, the plant produces 6 products simultaneously, at average rate of 220 tons per hour. After 27 years experience on various crushing operations, owner Ed Schuster says, "I'll put Lippmann crushers up against any that are made."

M-M-8-59

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Indiana limestone, "the nation's building stone," in the heart of the world's largest stone belt. Limestone a la carte is served in tremendous volume by the Empire Stone Company, Bloomington, Indiana, where Gulf lubricants keep all equipment running smoothly. In foreground, channeling machines are slicing the stone into blocks.

Empire Stone Company protects all equipment at 4 quarries

GULF MAKES THINGS

"We operate nearly 100 pieces of heavy equipment. But with the help of our Gulf Sales Engineer, we've set up a lubrication program that protects all these units with only 4 Gulf lubricants. This simplifies storage and inventory. More important—we've never had any machine downtime traceable to lubrication."

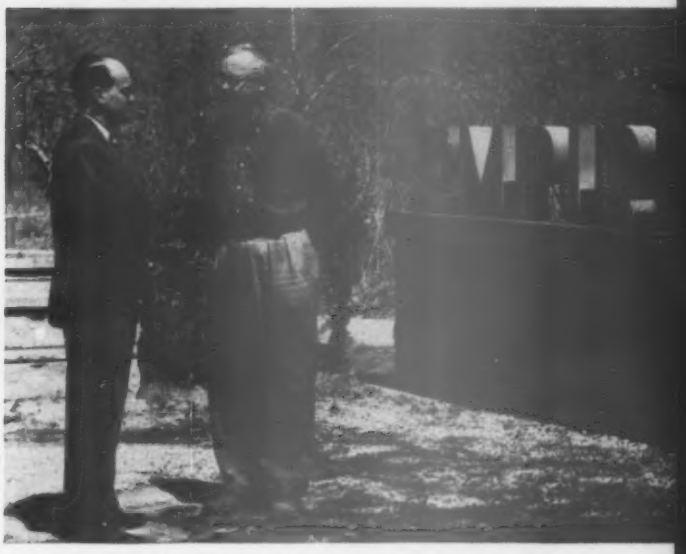
That's the word from Mr. Norris Chumley, President of Empire Stone Company, Bloomington, Indiana. Empire, a leading producer of building stone, operates 4 busy quarries in the heart of the Indiana limestone belt.

Their equipment includes 3 dozers, a power shovel, 2 dumpsters, 8 dump trucks, 6 air compressors, a dozen 30-ton hoists, a 25-ton traveling crane, 10 gang saws, diamond saws, splitters and 18 channeling machines.

Gulf Harmony oil is used in all their hydraulically operated equipment (such as the splitters, and the hydraulic controls on the dozers), for the electric motors of their channeling machines, gang and diamond saws, and in the valves of their air compressors.

Gulf Multi-Purpose Gear Lubricant is used in the gears of the channeling machines and the traveling crane. All dump truck engines are lubricated with Gulflube Motor Oil H.D. Track rollers on the dozers are greased with Gulf Track Roller Grease A-C.

Tireless workhorses at Empire Stone Company are the dozers that strip the overburden. Track rollers on all their dozers are greased every 1,000 hours with Gulf Track Roller Grease A-C . . . a lubricant specifically developed for this use.



Gulf man on the job checks lubricant needs at Empire Stone. Left, Marshall S. Ringo, Gulf Sales Representative, with Norris Chumley, President of Empire Stone Company.

with 2 Gulf oils, 2 Gulf greases . . .

RUN BETTER!

"Most of our equipment operates in the open air, exposed to limestone dust and moisture," says Russell Eads, Company Superintendent. "So we use the best lubricants available, and make sure they're changed at the proper time. This policy has paid off for us in keeping equipment downtime to a minimum."

Your quarry equipment will run better when you switch to clean-working Gulf lubricants. Try them and see for yourself. For more information, just call a Gulf Sales Engineer at your nearest Gulf office. Meanwhile, mail coupon for "Gulf Contractors' Guide"—the maintenance "bible" for heavy equipment.

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EDITORIAL

by GEORGE C. LINDSAY

Statistical surveys—help or hindrance?

INDUSTRY SURVEYS, though they may represent a bothersome problem to most of you, are essential to industry progress. They report it, or the lack of it. They indicate trends that you must know if you are to be successful in planning for the future.

If used properly, total industry information, collected by surveys, can be a good public relations tool. Until now, data on our industry have been used much too little for that purpose. If you're skeptical, ask Mr. Average Citizen if he knows the full importance of the rock products industry to the national economy. Ask your state and national congressman. Better than that, ask yourself.

Rock products, as an industry, is the largest single mining industry in the world. Our economy could not function without its products. How do we know? Some of you, as individual producers, tell us, the government, trade associations and others. But we don't know enough.

Many of you resist surveys asking for data on your operations. There are some sound reasons for your resistance. We urge you, though, to consider both the good reasons why you should report and the undesirable consequences of not reporting.

Too little is known about our national industry because not enough producers cooperate in surveys. Reasons for that lack of cooperation are many. Some, most unfortunately, don't have the information to report. Astounding, but true. Some simply don't want to reveal information on their own business.

Others don't report because they "don't have time," or "don't want to be bothered." And this is a real problem, even an imposition. A recent report shows that 120 man-hours per year are needed to file information on government surveys for each operating plant. That means fifteen 8-hr. working days—⅔ of a working month—for one man to do the job. The trade press and others conduct their own surveys, in addition. Expensive? Of course it is. But really, don't the advantages of having the information outweigh the disadvantages?

Our industry cannot operate in the dark. Total information, such as supplied by other progressive industries, must be made available. Without it, life for individual and collective industry producers would be a scene of horrors.

We do have meager data because many loyal and interested producers, proud of their industry and the part they play in it, supply the data.

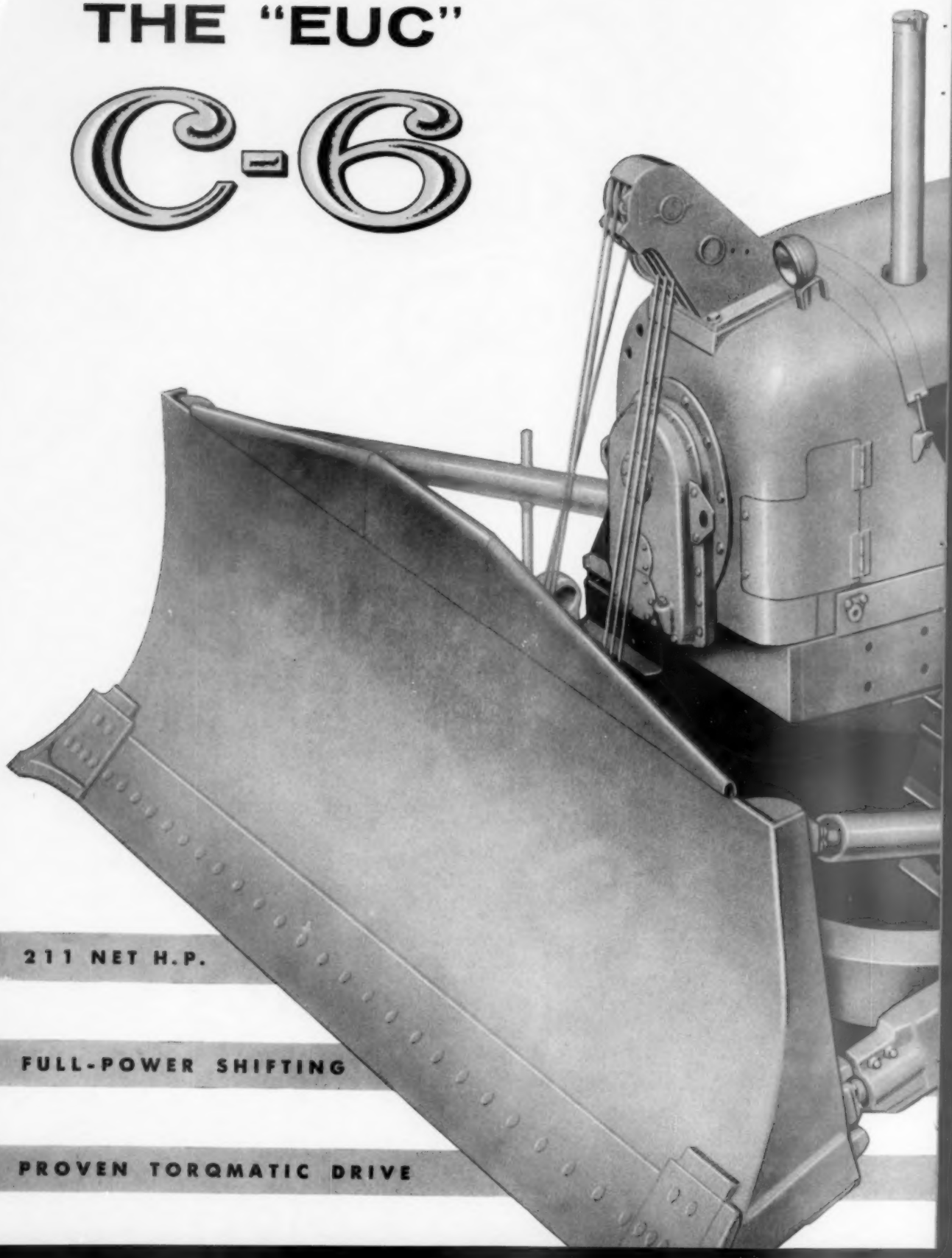
Don't let a few do this important job. Join the program and help yourself and your industry.

EUCLID

PRESENTS...

THE "EUC"

C-6



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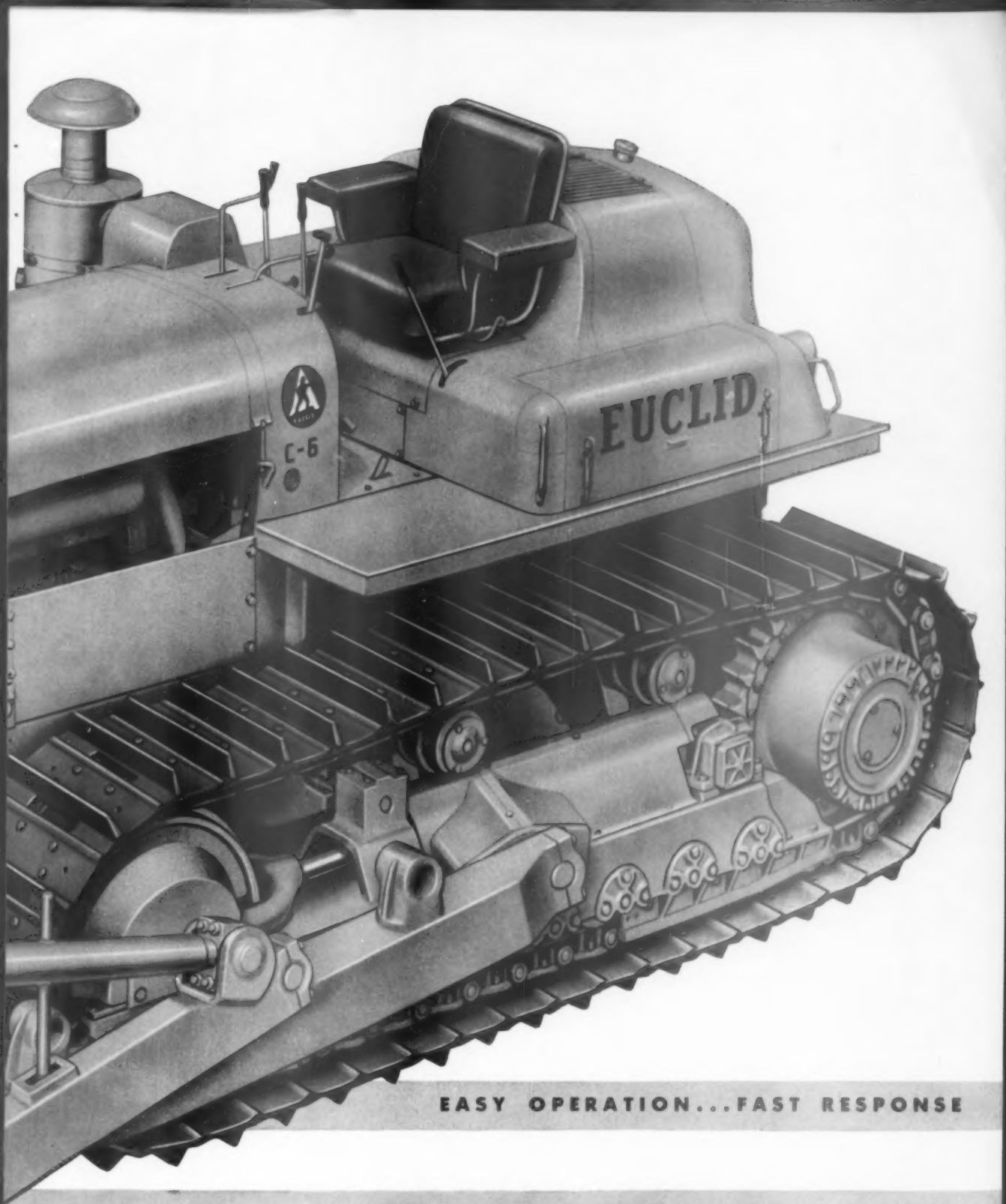
PROVEN TORQMATIC DRIVE



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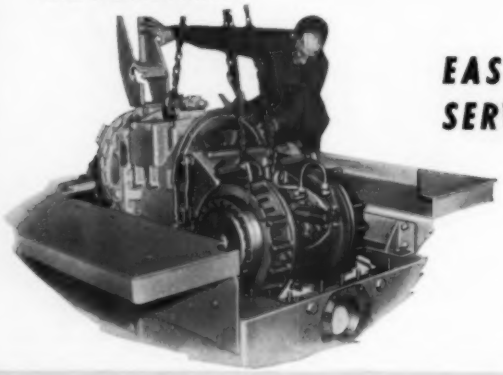
the "EUC" C-6 provides New Crawler Standards

Proved by over 5 years of rugged field test . . . in mines, quarries, heavy earthmoving and logging as well as on the proving grounds. With 211 net hp. and proven Torqmatic Drive, the C-6 features full power shifting and time-saving maneuverability . . . has plenty of power and speed for dozing, ripping, pushloading scrapers and all other big tractor work.

Operators report that excellent visibility and over-all ease of handling give the C-6 smooth performance that gets more work done every shift . . . and with less downtime for service and maintenance.



EASY SERVICING

Maintenance designed—the C-6 has exceptional accessibility and all major components are "out in the open"—easy to get to. For example, the engine is easily serviced or removed, and the converter, transmission, steering brakes and clutches assembly can be removed as a complete "package" without major disassembly . . . final planetary drives can be serviced without removing sprockets or breaking track . . . there are considerably fewer lube points than in competitive tractors.

Have your Euclid Dealer give you the performance facts that prove the C-6 assures a better return on investment

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ROCKY'S NOTES

by NATHAN C. ROCKWOOD

Recalling some early experience with concrete

THE NEW PRESIDENT of the American Society of Civil Engineers, when this is published, we presume is Frank A. Marston, for when this was written he had been chosen the official candidate. Probably that is of no great interest to most of our readers, although some, we know, are members of the A.S.C.E., the oldest and perhaps the largest of our engineering societies. The item is of much interest to this writer for reasons that we shall attempt to explain in a manner which may interest others who have to do with concrete and the ingredients that go into it.

Frank Marston is senior partner in Boston, Mass., of Metcalf and Eddy, world-renowned firm of consulting engineers specializing in waterworks, water treatment, sewerage, sewage treatment, etc. He has been with that firm since he graduated from Worcester Polytechnic Institute in 1907 with a B.S. in C.E. There were seven graduates that year in C.E., and the writer of these notes was one of them. So, Frank Marston was a classmate, but more than that he was a partner in our graduation thesis.

In those days in order to acquire a B.S. degree, the student was supposed to contribute the results of a bit of original research on some engineering subject. Our professor of civil engineering, Arthur W. French, was a very early enthusiast and pioneer in the development of a then novel engineering material—reinforced concrete. Presumably, he helped select the subject of our thesis, which was a series of tests on concrete slabs. We were to start with solid reinforced slabs and, in stages, remove part of the concrete on the underside until the final specimens represented a model of a typical floor slab supported by two reinforced-concrete beams.

The slabs all contained the same amount of steel reinforcement, and we were to test the current theories on reinforced concrete design: that in computing the strength of a floor slab or beam, the resistance of concrete to tension (on the underside of the slab and beams) could be neglected, with the assumption that all the tensile stress would be taken by the steel reinforcing bars. Consequently, theoretically, the slabs should prove of equal strength, with much saving of concrete in the beamed slabs. We were to determine ultimate strengths and flexure under stepped-up loads.

That was more than 52 years ago, and it is quite impossible for this old-timer to recall the results or even the size and number of the specimens—probably about 3x5-ft. and possibly 6-in. thick, maybe about 12 specimens in all. We do recall that the solid slabs tested considerably stiffer and appreciably stronger than the final beamed slabs. The floor portion that remained was about 2-in. thick, showing that the concrete tensile strength could not be neglected almost up to the final yield point. Whether our professor ever used any of our data, we do not know; they probably were not of much significance.

While we have long since lost all recollection of the details of our research as such, we still remember the physical labor involved in making, handling and testing the slabs. Our supply of cement came from the new (then) electrical engineering laboratory under construction some 700 or 800 ft., perhaps, from the civil engineering laboratory. Marston and this writer had to furnish the necessary transportation—uphill all the way. It is doubtful if we ever will forget lugging 94-lb. cloth bags of portland cement on our backs or shoulders. Neither of us was what might be termed of athletic build. (This writer then weighed about 130 lb., so a bag of cement was about two-thirds his own weight.) Where and how the aggregates came from escapes our memory—at least if we carried them up the hill from the same source, the loads could have been better adjusted to our carrying capacities.

We built our own wood forms—Marston was

Please turn to page 136

"Our maintenance on the Deister Screen? *NIL!*"

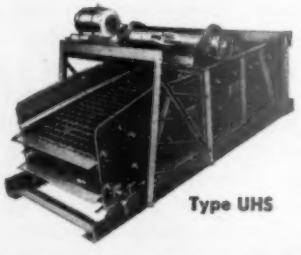
So says Joe Wittman, Plant Superintendent of Maybee Stone Company, Maybee, Michigan

From the time this highly efficient plant began operation in November, 1958, a Deister type UHS triple-deck 4' x 14' screen has processed every ton of high-grade limestone taken from the quarry pit. During this period, the Deister screen has operated 7 days a week—every week—and most of this operating time has been "around-the-clock."

Joe Wittman is responsible for maintaining production and meeting specifications at Maybee—and he knows that the maintenance-free, high-output performance of the Deister screen is essential in keeping his production on schedule. He says, "I'd recommend Deister screens to any quarry operator. In nearly a year of operation, most of it 'around-the-clock,' maintenance on the screen has been absolutely nil. If there are better screens than this one, I'd like to see them!"

The Deister Type UHS Vibrating Screen provides high capacity and peak efficiency through the Exclusive Opposed Elliptical Throw Principle—assuring that actual and "on paper" capacities are equally high. The screen features a Life-Time Unitized vibrating mechanism, with two-bearing construction and oil mist lubrication. Also, exclusively Deister are the adjustable screen panels, enabling the operator to increase or decrease the screening angle at the feed or discharge end, independently of the balance of the screening area.

The dependability of Deister Screens is a matter of record with many aggregate producers who know from on-the-job experience that low maintenance costs help hold overall production costs to a minimum. Coupled with Deister's proven ability to produce material to exacting specifications, this means lower cost per ton of material produced.



Type UHS

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WASHINGTON LETTER

by EDGAR POE

No drastic Highway Cut-back

There will be no drastic cut-back in the construction program of the 41,000-mile Interstate Highway System, as was feared for months during the first session of Congress.

The Bureau of Public Roads will allocate about $1,800,000,000 to the various states for the multi-laned interstate roads. The amount compares with $2,200,000,000 for the 1960 fiscal year ending next June 30.

On the other hand, the primary, secondary and urban highways will have $925,000,000 of federal funds available for fiscal 1961 as compared with $900,000,000 for the 1960 fiscal year. The federal government puts up 90 percent of the cost for building the interstate roads, and the states each put up 50 percent of the cost of the primary, secondary and urban highways.

Funds for the Interstate System will swell as a result of passage by Congress of a measure temporarily raising the federal gasoline tax from 3 cents to 4 cents a gallon on gasoline and diesel oil. The increased levy will remain in force until July 1, 1961, and will yield nearly $1,000,000,000 in additional revenue. Final passage of the bill marked a partial victory for President Eisenhower in his battle with Congress.

President Eisenhower in his budget message to Congress in January advocated that the federal gasoline tax be raised to 4½ cents a gallon for a five-year period so that the depleted Interstate System road fund be replenished. The first reaction of Democratic leaders in the House and Senate was that such an increase was strictly out of the question. Finally after long back and forth debate and some bickering, Congress gave the Chief Executive and the Bureau of Roads about half of what they wanted.

Under terms of the measure part of the receipts from automotive excise taxes which now go into the Treasury Department's general fund, is scheduled to be diverted into the Highway Trust Fund beginning July 1, 1961. The scheduled amount to be shifted consists of half of the income from the 10 percent tax on new automobiles and trucks, and 62½ percent of the yield from the 8 percent tax on parts and accessories.

The Eisenhower Administration is opposed to diverting any of the fund now going into the general fund on the ground that it would jeopardize the balancing of the budget. However, it is possible that this section of the bill may never become operative because Congress is committed to take another legislative look at the whole financing picture early in 1961.

Meantime, motorists in 13 states are now having to pay 11 cents a gallon (4 federal and 7 state) in taxes for gasoline. They are Alabama, Florida, Kentucky, Louisiana, Maine, Mississippi, Nebraska, New Hampshire, North Carolina, Ohio, South Carolina, Tennessee and West Virginia. Five additional states have a state tax of 6½ cents a gallon. They are Arkansas, Georgia, Oklahoma, Vermont and Washington.

Missouri has the smallest tax of all the states. It levies a 3 cent state tax.

Congress raised the tax a penny a gallon despite the fact that 34 governors expressed opposition to it.

Concrete Aid against Radiation

Concrete, one of the materials most suitable for shielding applications, has come in for a series of tests of various kinds at the National Bureau of Standards. A gamma-ray penetration study unquestionably will be of tremendous help in the proposed development of suitable shelters against radiation from nuclear weapons.

Penetration into the concrete was experimentally determined by the bureau in a stack of seven reinforced concrete slabs, built in a pit, eight and one-half feet and 40 inches deep. Geiger counters inserted into spaces between the slabs measured the fallout rate as a function of depth.

The bureau discovered that the dose rate under three inches of concrete was found to be about one-tenth that at nine feet above the ground. Each additional six inches of concrete reduces dose rate by approximately one-tenth. The overall attenuation in 22 inches of concrete is therefore about one ten-thousandth of the dose rate at nine feet above the ground.

Billions for Public works Congress approved a total of several billions of dollars for new construction for public works, military construction, Interior Department reclamation projects, new federal buildings and hospitals under the Hill-Burton Act.

The largest construction projects of all are the huge road programs—Interstate, Primary, Secondary and Urban—and the housing projects. A spokesman at the Department of Commerce said: "Unless there is an unforeseen pitfall along the way, a record amount of cement and asphalt will be used during the 1960 fiscal year."

Tight money Market Officials of the Federal Reserve System, Treasury Department and economists at the Department of Commerce concur that the United States is now undergoing the tightest money situation in a generation.

Because interest rates have been rising steadily for more than a year, many municipalities and states have postponed authorized bond issues for new construction. Nevertheless, construction activity is humming along at or near a record pace, and the road ahead is favorable.

New engineer Head named The Army Engineers' tremendous flood control, rivers and harbors and other water resource development program is now headed by Brigadier General William F. Cassidy.

Gen. Cassidy, 51, succeeds Brigadier General John L. Person as the Department of the Army's new assistant chief of engineers for civil works. Alaska-born and West Point-educated, Gen. Cassidy was assigned to Washington from Korea, where he was a logistics expert advising the Korean army since 1958.

Democracy At work Senator Harry F. Byrd of Virginia, watchdog of the United States Treasury, declares that passage of a strong, effective but assertedly just labor bill by Congress is "one of the best evidences I have ever seen of democracy at work."

The Senate had passed a weak bill. This aroused the American public who had become sick of the powerful gangsters and crooks that had gotten control of some unions.

"In my public service," said the distinguished Senator from the Old Dominion, "I have rarely seen a more aroused public—individual members of labor unions as well as other citizens. This proves that in our democracy the people, when they assert themselves, can control."

Safety Standards The House may put to a vote a bill to require safety standards for government autos. A health and safety subcommittee approved the proposal. It would let the Commerce Secretary set safety standards to be met by government-bought cars. Air Force Col. John Stapp, in hearings on the bill, urged seat belt attachments. He knows about safety belts, having traveled 632 miles per hour in a rocket sled.

Labor law Milestone The labor reform law enacted by Congress is perhaps one of the greatest legislative achievements in recent years. The country demanded and the law-makers responded by providing legislation to end secondary boycotts, and coercive or blackmail picketing, and end a no-man's land in labor-management relations.

The amended law should curb James R. Hoffa, leader of the colossal and racket-infested Teamsters' Union, and others in the Hoffa category, both big and little. At the same time the Taft-Hartley law as amended should do much to assure honest unionism and democracy for the rank-and-file unionist in the affairs of his organization.

The bill, which for all practical purposes is the Landrum-Griffin bill, requires the filing of annual financial reports by unions covering income and expenditures and loans.

Major provisions in the law include:

1. Closes the no-man's gap between federal and state jurisdiction in labor cases by allowing state courts to handle cases rejected by the National Labor Relations Board.

2. Permits strikers (for a one-year period) to vote in union representation elections even after they have been replaced on the job by non-strikers.

3. Closes a Taft-Hartley loophole on secondary boycotts barring union threats against any person in an effort to promote a boycott by a neutral concern against one having labor trouble.

4. Restricts picketing to organized companies and their employes, and bars picketing if the company already has recognized another union legally or if the picketing union has lost a representation election within the preceding year.

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New 66" Telsmith FC Fine Crushing Gyrasphere with grooved pulley suitable for V-rope drive and with oil tank, oil piping and separate oil pump and motor are standard equipment on the new 66" Gyrasphere.

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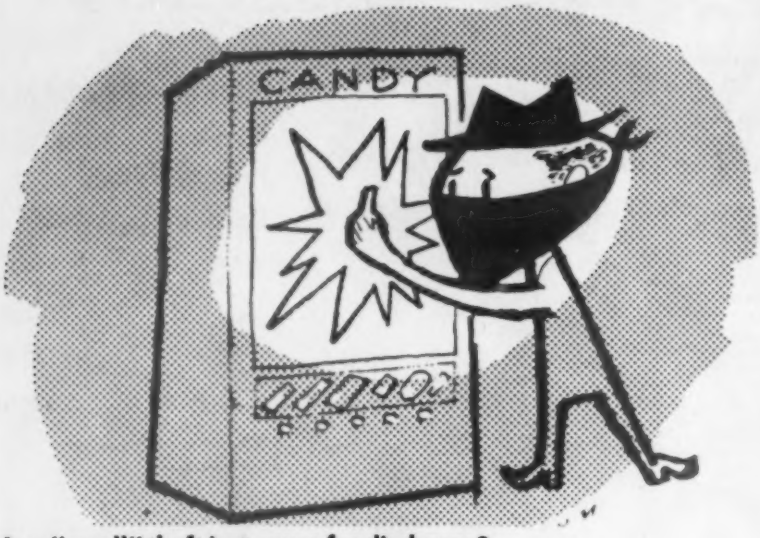
LABOR RELATIONS

A ROUNDUP OF ACTUAL DAY-TO-DAY IN-PLANT PROBLEMS AND HOW THEY WERE HANDLED BY MANAGEMENT MEN

How would you decide?



Is a "small" theft just cause for discharge?

What Happened: Stealing and pilfering had become a problem. At one point the management discovered that a group of workers, including two supervisors, had stolen $14,000 worth of company property. They were fired. But pilfering of small things continued. Small tools, fittings and parts kept disappearing.

Finally the company put out a strong warning to employes—anyone caught taking anything that didn't belong to him would be fired "forthwith." X was caught taking some candy out of a broken vending machine. He was promptly fired. He grieved:

1. The theft was so small that I shouldn't be fired.
2. The vending machine was not the company's property so it had no jurisdiction.
3. I didn't break the machine. I saw it was broken and saw no harm in helping myself to a couple of candy bars.

The company said "stealing is stealing," and the cost of the loot is not a factor. Besides, the company added, we had warned everyone that any stealing would be dealt with severely.

Was the employe:
Right? ☐ **Wrong?** ☐

What Arbitrator Klamon ruled: "It is the responsibility of management to see that pilfering, damage to equipment, machines, etc. does not happen —but if it does happen, to take appropriate action. Taking candy out of a vending machine is pilfering. The company had brought to the attention of its employes that stealing, however slight, would be dealt with severely. The fact that the vending machine was not the property of the company is not material. It was on company property. If the company viewed this act as being serious enough for discharge, the Arbitrator should not interfere. Grievance denied."

Can a junior employe be denied a promotion even though his test score was much higher than that of a senior applicant?

What Happened: When a vacancy opened up, two men applied for the promotion. John Hally had 10 years seniority and Al Akron had 6 years. The policy on promotion was simple: "If 2 or more applicants are relatively equal in qualifications to fill a vacancy, seniority shall govern."

Although it had never before given a test for a job vacancy, management decided to ask both men to take a written exam. Hally, the older man, received 67%. Al came through with 80%. Yet the company promoted the senior worker. Al protested:

1. I got the higher grade and should be promoted.
2. What good are tests if you still get side-tracked after you come out way on top?

The company answered:

1. We didn't say the test would be the deciding factor.
2. We felt that Hally has better work performance and his potential on the job seems greater.
3. Management must make the decision on promotions.
4. Hally was nervous. Besides this was a new kind of exam and we are not convinced that it is a good one.

Was Al:
Right? ☐ **Wrong?** ☐

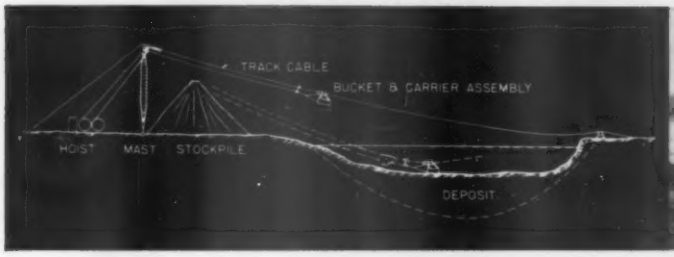
What Arbitrator Hayes ruled: "It is the company's right and responsibility to judge the qualifications of employes applying for a job vacancy as long as it doesn't act arbitrarily or in bad faith. The company determined that Hally had superior job performance and that the test was too experimental to be given dominant consideration. Hally is entitled to the promotion."

(Continued on page 30)

FROM PIT TO STOCKPILE...

Dig and Haul at Lowest Cost with a Sauerman Slackline

DIGS AND HAULS—New Sauerman Slackliner Bucket is especially designed for tough digging. It inhauls at high speed, dumps automatically, and returns to digging point by gravity.



STOCKPILES MATERIAL—Regardless of long hauls, the Slackline builds a large surge pile to allow charging the plant at any desired rate. Plenty of material is in ready reserve for seasonal or unexpected increases in schedule.

Operating costs as low as 8¢ per yd. for labor, power and maintenance are reported by Slackline Cableway owners when digging free-caving material at average depth and haul distances.

These low costs are achieved by using just one machine—the new Sauerman Slackline Cableway. Multiple equipment is not needed to supply your required tonnage. For example, on an average haul and digging depth, a single medium size machine will charge a 200 tph. plant.

The high Slackline mast permits building a large pile which can supply plant demands through a plate feeder and tunnel conveyor, front-end loader or clamshell. The new Sauerman torque converter diesel-hoist automatically matches power to load demands and is designed for continuous duty. Fluid drive cushions out shock loads to reduce fuel and maintenance costs, extend cable life.

Increasing land values and depleting resources make it necessary to get all the material out of your deposit. You can do this with a Sauerman Slackline. The machine will dig from ground level to deep under water and keep your plant running additional years at the lowest possible operating cost. Several pits are now operating Slacklines on 1000-ft. spans with average hauls of 500 to 700 ft. and from 100-ft. depths.

Write or call, giving your tonnage requirements, depth and length of deposit—if available. We will promptly supply more information on Slackline Cableways, and show you how to *save with a Sauerman.*

CONTROL IS REMOTE, EFFICIENT AND SAFE—Control station can be conveniently located at any strategic point in plant area. Operator can watch entire operation. Fatigue is minimized and personal danger eliminated.

TORQUE CONVERTER INCREASES PRODUCTION, CUTS MAINTENANCE—Now available, the new Sauerman Torque Converter Hoist automatically matches power to load, provides a smooth and steady flow of material, reduces fuel, maintenance and cable costs.

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LInden 4-4892 • Cable CABEX—Bellwood, Illinois

Crescent Scrapers • Slackline and Tautline Cableways • Durolite Blocks

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SOMETHING NEW UNDER THE GROUND

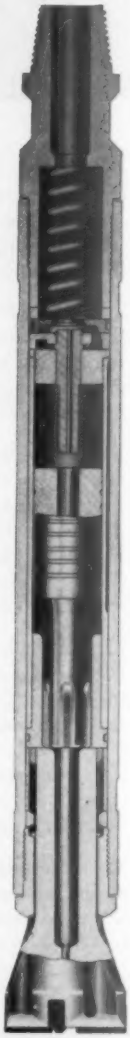
Revolutionary I-R
"DOWNHOLE" DRILL

service-proved on millions of feet of hole, now available in FOUR SIZES, with constant, thru-the-bit hole cleaning!

The I-R DOWNHOLE drill is a rugged, heavy-duty, sub-surface percussion drill that delivers full striking power *right at the bit*. Hundreds of units, in operation all over the world, have drilled millions of feet of hole with outstanding records of performance and economy.

Designed for use with Ingersoll-Rand Drillmaster and Quarrymaster drilling rigs, the DOWNHOLE drill is also available to present users of other types of rotary drilling equipment. Conversion from roller cone bits to DOWNHOLE drilling is simply a matter of screwing the drill to the rod or adapter and adding an air-line lubricator.

Here are some of the features that put the DOWNHOLE drill in a class by itself.



PATENTED HOLE CLEANING. All operating air is exhausted through the bit and additional *high-pressure air* blows continuously through the bit for maximum hole cleaning, even while drill is not running.

RENEWABLE WEAR SLEEVE. The entire unit is encased in a renewable wear sleeve that can be replaced at low cost when the outside diameter is worn down. (Patent Pending)

THREADLESS CARSET BIT DESIGN. The service-proved result of years of experimentation and field operation, it has no threads to strip or work loose and no energy loss through a separate connection.

SEALED UNIT. There are no ports in the outside of the drill which could admit abrasive material into the working parts.

CHECK VALVE. An optional check valve can be mounted behind the drill to permit operation under great heads of water—keeps mud and cuttings out of the machine even when the drill is stopped.

SPECIFICATIONS	DHD-275	DHD-325A	DHD-400	DHD-500
BIT SIZES	4¾" & 5"	6" & 6½"	7" & 7½"	9"
ROD SIZES (O.D.)	4"	4" & 5"	5½"	7"
LENGTH (BIT EXTENDED)	52¾"	52½"	63¼"	68½"
OUTSIDE DIAMETER	4¼"	5⅛"	6"	7¼"
WEIGHT (INCLUDING BIT)	158 lb.	236 lb.	362 lb.	586½ lb.

For further details, send for a copy of Bulletin 4203.

Ingersoll-Rand

5-864

11 Broadway, New York 4, N. Y.

A CONSTANT STANDARD OF QUALITY IN EVERYTHING YOU NEED FOR DRILLING ROCK

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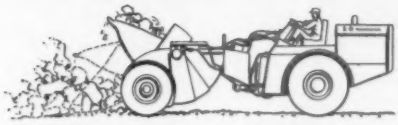
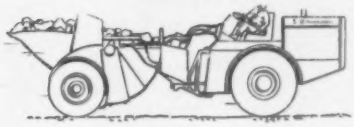
Now a SELF-LOADING TRUCK! The proved S-D TRANSLOADER

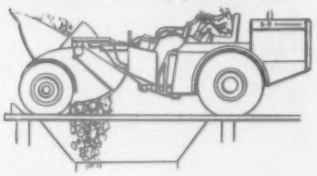
1. LOADS itself!



2. TRANSPORTS load!



3. DUMPS load into crusher, hopper, etc.



- Eliminates Shovels, Loaders and Trucks!
- One man (Transloader operator) does the job!
- No synchronization of several pieces of equipment!

THIS HIGH-SPEED Self-Loading S-D Transloader promises you tremendous savings! Now you can eliminate (1) costly investments in shovels, loaders and trucks! (2) Eliminate multiple manpower in shovel, loader and truck operators! (3) Eliminate standing idle time of shovel or loader equipment, and (4) standing idle time of the operator when he doesn't have a truck to load! (5) Eliminate standing idle time of trucks and (6) their drivers while trucks are being loaded! (7) Eliminate the maintenance and costly upkeep of all this machinery and equipment! The one-man operated SELF-LOADING S-D TRANSLOADER shuttles back-and-forth between loading point and dumping station! Your S-D Transloader will keep working full time—loading, transporting and dumping in continuous, uninterrupted performance cycles! All facts and information, including illustrated literature, specifications, time studies, maintenance data, etc., are all packaged and ready for mailing to you on request, plus name of dealer nearest you. Write or call us today! *Sanford-Day Iron Works, Inc., 612 Dale Avenue, Knoxville, Tenn. Telephone: 3-4191.*

SANFORD-DAY

KNOXVILLE, TENNESSEE

TO: Sanford-Day, 612 Dale Avenue, Knoxville, Tenn.

Gentlemen, please forward by return mail Complete Information Packet on the S-D Transloader:

NAME _____

FIRM _____

ADDRESS _____

CITY _____ STATE _____

Enter 1006 on Reader Card

If an employe is on layoff is he still entitled to holiday pay?

What Happened: The company had a standard holiday pay policy—if an employe worked on the day before and the day after a holiday, he was paid for the holiday.

Because the plant was being moved to another area, five employes were terminated. They had some vacation pay coming to them and this was included in their final pay check.

Under normal conditions, these employes would have taken their vacations in late May or early July. In either case, the vacation period would have embraced a paid holiday—(Memorial Day or July 4th)—and the employes would have collected an extra day. But because these employes were not around to take their vacations, due to the terminations, they were not entitled to the holiday pay. At least, so said the company. But the employes had a different view:

An employe who is laid off or terminated through no fault of his own is still an employe in a technical sense. Under the seniority policy of the company, an employe does not lose his status until he has been off the payroll for a period of one year. Therefore, he cannot be denied benefits which would accrue to regular workers.

The company answered further:

1. A worker is entitled to holiday pay only if he works before and after the holiday. This the employes did not do.
2. The employes were given vacation pay because they were being terminated. They were not on vacation and could not claim any pay for a holiday that fell during the vacation period. Besides, the vacation pay was really a form of severance.
3. A layoff is not the same as a termination. The employes' jobs were eliminated and the workers have no chance of recall. For this reason the employes do not retain the "status of employe" for one year.

Was the company:
Right? ☐ **Wrong?** ☐

What Arbitrator Prasow ruled: "The Arbitrator is of the opinion that laid-off or terminated employes still retain some status with the company. The 'seniority section' of the agreement provides that an employe's seniority shall continue to be effective even while on layoff, provided his absence from the payroll does not exceed one year. That is, a laid-off employe, even though he is terminated, does not sever his entire relationship with the company until a year has gone by. In this sense his status is quite different from an employe who has been justifiably discharged. It is generally held by arbitrators that, unless the contract specifies otherwise, employes who are laid off within a reasonable period prior to a holiday should be paid for such holiday. The basis for this view is that the employe has met the basic conditions which qualify him for holiday pay, and that his being unable to meet other conditions because of some action by the company should not disqualify him from receiving such pay. The employes are to be paid for the holiday."

Should an employe be fired if he works for a competitor?

What Happened: Armand Charpentier was a maintenance man. When overtime was cut out in his department, he looked around for a part-time job to supplement his income, and found work with a competitive firm. When his boss discovered this he gave Armand a choice: "Work for them or work for us. Which do you want? You can't do both."

"I want to work for both," was the reply. When Armand refused to budge he was discharged. At arbitration he came up with the arguments:

1. What I do on my own time is my own business.
2. I have no access to secret or confidential information. I'm a maintenance man and I fix machines. That's all.
3. My work is good here so you have no complaint.
4. You have no rule against working for competitors. This practice has been going on for years. Why pick on me?

The company answered:

1. True we have no rule—but we can make a rule.
2. Maybe Armand does not have access to secrets, but he knows a lot of what's going on. We don't want our competitors to learn even harmless things about us from our own employes. We don't want to talk in whispers when Armand is around because we might feel something will get back.

Was the company:
Right? ☐ **Wrong?** ☐

What Arbitrator Pigors ruled: "With no established rule against dual employment, and without evidence that Mr. Armand Charpentier failed to measure up to his assigned responsibilities, this Arbitrator can only conclude that Mr. Charpentier's dismissal was without just cause. He should be reinstated with all his rights restored."

BRADLEY HERCULES MILLS

HOW TO INCREASE CEMENT PRODUCTION UP TO 50%...

The capacity of an existing tube or compartment mill can be increased up to 50% or even higher simply by installing a Bradley Hercules Mill as a preliminary pulverizer on either the dry raw or finish side. Yet this increased production of cement raw material or finished cement is obtained at no increase in horsepower consumption per ton or barrel produced. The Hercules automatic electrical feed control eliminates manual operation. Rugged construction . . . dustless operation . . . easy accessibility to grinding parts keep maintenance costs at an absolute minimum. That's why so many in the cement industry rely on the Hercules Mill for increased production of finished material.

See Chemical Engineering Catalog or
for complete information, write for Catalog No. 63

BRADLEY PULVERIZER CO. LONDON **ALLENTOWN, PA.** BOSTON

superior grinding equipment since 1891

Enter 1007 on Reader Card

PEOPLE IN THE NEWS

Dundee appoints production chief

WILLIAM R. DERSNAH was named production superintendent of new $25,000,000 plant at Dundee, Mich., being completed by Dundee Cement Co. The installation is to begin operations before the end of the year.

Mr. Dersnah, who received the B.S. degree in chemistry from the Central Michigan University in 1943 and the M.A. degree in education from the University of Michigan, Ann Arbor, in 1951, has had experience both in the teaching field and in the cement industry. He has served as chief chemist for Medusa Portland Cement Co., manufacturing process engineer for the Portland Cement Association, Chicago, and chief chemist on the Gresik Cement Project near Surabaja, Java, Indonesia for the International Cooperation Administration.

Huron Cement staff sales shifts

HURON CEMENT CO. has announced the promotion of Harold B. Ackerman to New York division sales manager. In the same shift of staff personnel, Dave Hungerford has been named Oswego district sales manager and William H. Lee hired as sales representative in the Oswego area.

Mr. Ackerman's new position entails supervision of sales in both the Oswego and Buffalo districts, comprising the company's entire trading area in western New York State. He had formerly served as Oswego district sales manager.

Mr. Hungerford has represented the company in the Oswego district for more than ten years, and now fills the position vacated by Mr. Ackerman.

Before coming to Huron as sales representative, Mr. Lee had had selling and purchasing experience in New York.

Acme-Phoenix appointment

DONALD E. MUIR has been appointed general manager for Acme-Phoenix Materials Co., Inc., Phoenix, Ariz. Mr. Muir, a graduate of the University of California, Los Angeles, had been associated with the Phoenix Cement Co., a division of American Cement Corp. He had previously been director of public relations for Riverside Cement Co., Los Angeles, Calif.

National Gypsum manager

FRANK B. PHILLIPS, JR., has been promoted to the post of sales manager of the Houston district of National Gypsum Co. Mr. Phillips, who joined the company in 1946, served as head of the New Orleans district. He now succeeds Dorsey Bobbitt, new manager of the Western Sales Division.

Robert E. Spence, former assistant manager of the company's Birmingham district, has been named to fill Mr. Phillips' former post, which includes Louisiana and the southern part of Mississippi.

Master Builders names Detroit head

MASTER BUILDERS CO. of Cleveland, an American-Marietta Co. Division, has promoted Jack E. Neuman from a field representative to Detroit branch manager, succeeding Charles Lyons, named special assistant to the vice president for marketing.

Peerless promotions

PROMOTION OF S. W. DREWS as assistant to the vice president-sales; J. F. Powell as director of masonry sales and P. F. Vanderlind as director of highway cement sales have been announced by Peerless Cement Co., a division of American Cement Corp.

Sendker named New England head

FRANCIS T. SENDKER has been appointed New England District Sales Manager by Alpha Portland Cement Co., Easton, Pa., effective Sept. 1.

The former Syracuse, N.Y. sales representative was graduated in civil engineering from Syracuse University. Mr. Sendker will have headquarters in Boston.

The Sendker appointment follows the retirement of Melville B. Chard, former head of the New England area, after 34 years of outstanding sales with the company. *(Continued on page 41)*

MORE AND MORE THE ANSWER TO LARGE VOLUME SPECIFICATION AGGREGATE AT LOW COST IS

WEMCO

More often than not an analysis of an aggregate production problem today will come up with WEMCO as the sound solution.

The reason: WEMCO's near-20 years of experience in the development of equipment and methods, aiding operators to keep pace with increasing volume demands and stricter specifications.

WEMCO equipment for preparation, beneficiation and handling of aggregate is at work in hundreds of installations.

We'll be happy to discuss your operation in terms of profitable steps for the future.

a division of
Western Machinery Company, 650 Fifth St., San Francisco, Calif.
and throughout the world

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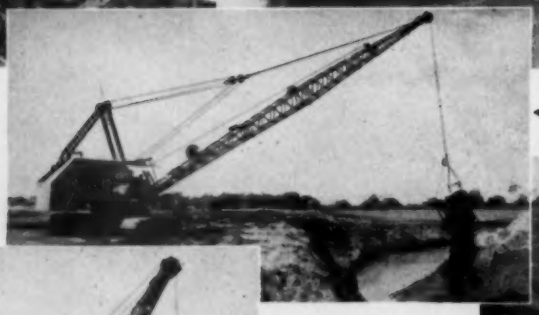
Manitowoc...

pick of the pits for big capacity

DIGGING
LOADING
STOCKPILING

LOADING RIP-RAP in Dayton, Ohio, this 2½-yd. Manitowoc maintains high output under any conditions.



◀ DIGGING GRAVEL is the job assigned to a 4-yd. drag in Dallas. Equipped with a 100 foot boom, the rig averages 400 yards per hour.

DREDGING SAND AND GRAVEL in Ohio, the 6-yd. dragline shown reaches 45 to 50 feet below the water for gravel.

CHARGING BINS for a county asphalt plant, this 1¼-yd. Manitowoc handles 850 tons of material each shift.

There's good reason why Manitowoc shovels and draglines are the "pick of the pits" in every area of the rock industries. You can't beat a powerful Manitowoc for *long term* big output. And, you get more years of service from your investment.

The time-tested Manitowoc power train is the most simple in the industry. Every unit of horsepower carries a full work load — there's no wasted energy. The result of power-saving design is a work cycle that is faster, smoother, and more efficient. Pit production increases. Service and maintenance costs stay at the lowest level.

For loading rugged rock or abrasive aggregates, your Manitowoc has a high strength alloy steel boom welded in tubular shape; rigid, dual dipper sticks; and the solid stability that can't be matched by other types of material handling equipment. It's a quarry-proved machine — ready for anything!

Make a point to get further information soon on the great *new* line of Manitowocs — call your helpful distributor.

Manitowoc

SHOVELS AND DRAGLINES 1¼ to 6 Yds.

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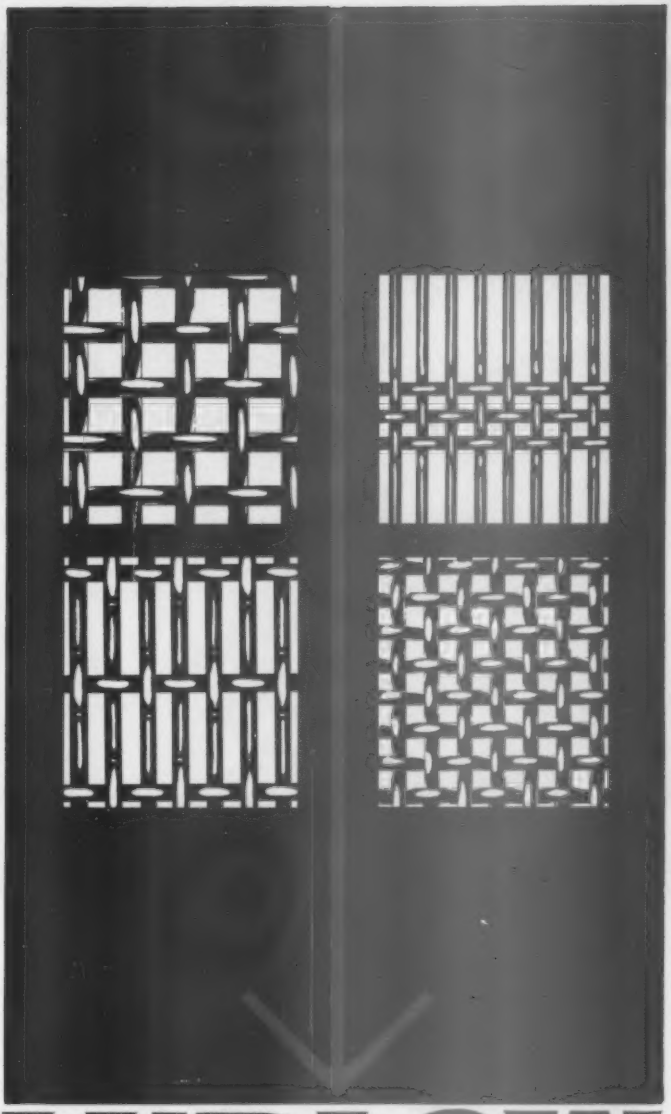
MANITOWOC ENGINEERING CORP.

(A subsidiary of The Manitowoc Company, Inc.)

MANITOWOC, WISCONSIN

Lower Cost Screening



Tougher alloyed wire for longer wear • Controlled ductility for extreme resistance to fatigue breakage • Tighter weaving preserves accuracy of openings • Precision applied hook strips for easier installation and maximum tension prevents distortion, buckling • Don't accept less—Order quality L-S Screens by name. *Write for Condensed Screen Reference Catalog.*

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SPACE SCREENS

Woven from any steel or any other metal that can be drawn into wire

IMMEDIATE DELIVERY-Most weaves & sizes

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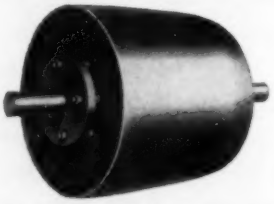
STEPHENS-ADAMSON

BELT CONVEYOR SYSTEMS LOWER STONE & AGGREGATE HANDLING COSTS

A river of stone and aggregate is carried daily over the innumerable sand, gravel and rock handling and processing installations designed and built over the years by STEPHENS-ADAMSON engineers. Every operator's handling problem receives individual consideration and over 58 years of STEPHENS-ADAMSON engineering "know-how" provides a valuable source of ideas for meeting and solving the problems of each new installation. The final result is always the same . . . bulk materials are handled at the lowest cost per ton. Backing up the "know-how" and experience is a quality engineered line of components, each providing an exclusive combination of features—many of them carrying patents by S-A engineers. Put STEPHENS-ADAMSON engineering experience and manufacturing skill to work for you —write for full information today!

Stone rides uphill on a 19 degree slope from a gyratory crusher. The 36 inch wide belt, pictured, carries 650 tons per hour along a 439 foot run.



S-A CURVE-CROWN PULLEYS
—Maximum belt training effect with minimum belt stretch and wear are provided with exclusive S-A CURVE-CROWN design.

WRITE FOR BULLETINS 355 and 558

S-A
MATERIALS HANDLING PRODUCTS
SEALMASTER BALL BEARING UNITS

ENGINEERING DIVISION
STEPHENS-ADAMSON MFG. CO.
GENERAL OFFICE & MAIN PLANT, 7 RIDGEWAY AVENUE, AURORA, ILLINOIS

PLANTS LOCATED IN: LOS ANGELES, CALIFORNIA • CLARKSDALE, MISSISSIPPI
BELLEVILLE, ONTARIO

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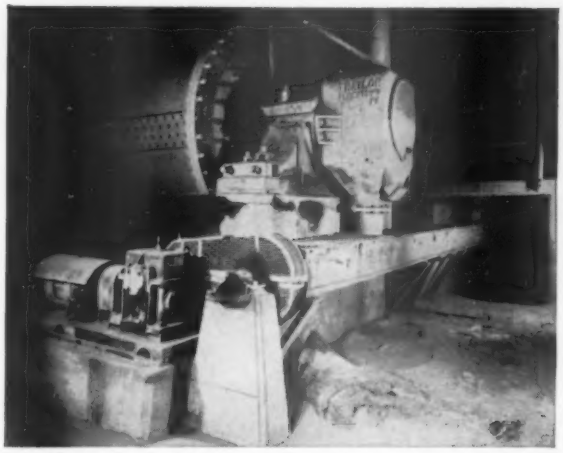
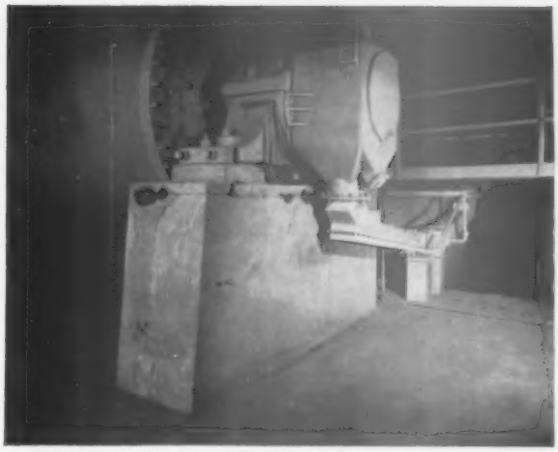
The Arithmetic of Materials Handling



BEFORE: **Dirt, noise and mechanical breakdown** were constant problems in this cement plant, where two mechanical conveyors were used to collect raw materials. A 5 h.p. motor driving auxiliary equipment wasted valuable space and power, required frequent maintenance. Spillage clean-up wasted costly man-hours.



AFTER: **Clean, simple, quiet.** Notice the difference two 8" F-H Airslide® fluidizing conveyors have made. No dangerous moving parts. Nothing to lubricate. Auxiliary equipment and foundations are gone. Power needs are now only ⅛ of previous needs. Fluidizing saves wear and maintenance.

AIRSLIDE® Fluidizing Conveyor

minimizes material loss . . . maintenance . . . moving parts

If you are now handling dry, pulverized materials, the F-H Airslide Fluidizing Conveyor can help you stop noise, and air-pollution, as well as speed flow and reduce maintenance cost.

Simplicity Itself

F-H Airslide conveyors fluidize dry, pulverized materials with low pressure air.

These materials literally flow at high speed, down the inclined conveyor. Power requirements are small.

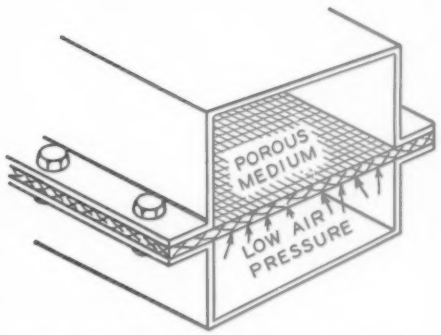
Flexibility, Low Cost

For unlimited applications, Airslide conveyors take up little space, and can be used singly and in combination with other Fuller pneumatic conveying systems. The movement of fluidized material can be around corners, between floors, through walls—nearly any conveying distance.

Better Housekeeping

Can Fuller conveying systems help eliminate your housekeeping problems—cut your maintenance and handling costs? Write today, outlining your problem in handling dry, finely-divided materials. Fuller will gladly make appropriate recommendations.

"Pulverized Materials Flow Like Water!"



FLUIDIZING PRINCIPLE: Porous supporting medium divides conveyor section into two "compartments". Dry material flows down inclined conveyor, fluidized by low-pressure air entering beneath porous medium.

FULLER COMPANY GENERAL AMERICAN TRADE MARK

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. . . . pioneers in harnessing AIR

FULLER COMPANY
102 Bridge St., Catasauqua, Pa.
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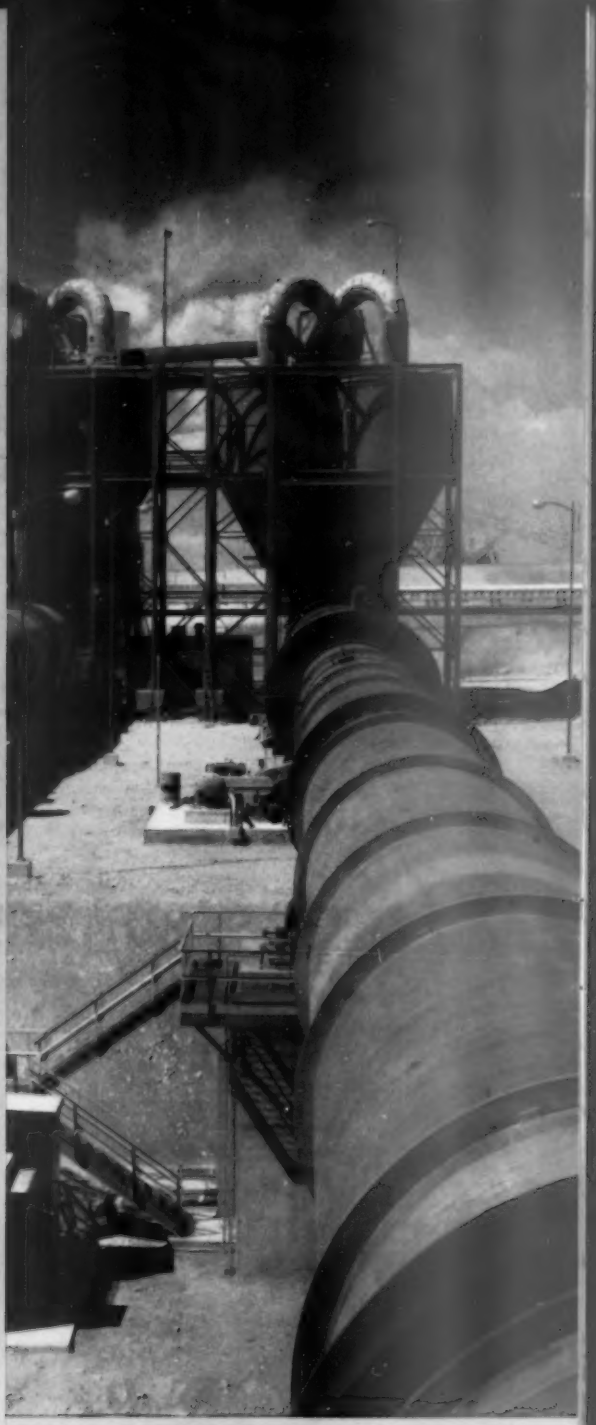
an electronic control success story every process engineer will want to read...



Typical application of Foxboro Electronic Consotrol Instrumentation . . . Riverside Cement Company's modern plant at Oro Grande, Calif. 310′ kilns have all process variables under Foxboro electronic control. Other major Foxboro electronic installations include petrochemical plants in the U. S. and Canada, nuclear reactors, as well as unattended booster stations on a 680-mile crude oil pipe line.

FOXBORO

REG. U.S. PAT. OFF.

s computer-controlled on-stream with lectronic Consotrols

— temperatures — flows etronically controlled

nt kilns, 310′ long, 10′ and 12′ in diameter plete Foxboro electronic control at Riverside o Grande, Calif. All process variables, includ- atures, motion, differential pressures, motor nd gas-air ratios are included in this fully nt system.

ic Consotrol* Instrumentation includes trans- corders, converters, integrators, alarms — all by a common 10-50 ma, d-c signal. Trans- unshielded lines. And this ultra-modern con- npatible with process control computers.

Consotrol Instrumentation is ideal wherever istance control is required. Ask your local r about Electronic Consotrols — or write for Foxboro Company, 8311 Neponset Avenue,

ONIC CONSOTROL INSTRUMENT FOR EVERY CONTROL LOOP FUNCTION

icating Transmitters
any standard Foxboro suring element — continue neasure and indicate even vent of power failure.

Electrical Converters
Convert EMF and Resistance measurements to a 10-50 ma, d-c signal. Rack or panel mounted. No batteries, no slidewires, no servos.

2-wire Transmitters
For measurements such as pressure, absolute pressure, differential pressure, and level. Require no local power supply.

Indicating Controllers
May be mounted individually or in some housing with recorder. Each operates and pulls out from panel — completely independent of the other.

Typical application of Foxboro Electronic Con . . . Riverside Cement Company's modern plant 310′ kilns have all process variables under Fo trol. Other major Foxboro electronic install chemical plants in the U. S. and Canada, nucl as unattended booster stations on a 680-mile

FOXBO

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Ralph H. Campbell

Medusa announces executive assignments

RALPH H. CAMPBELL, 25-year associate of Medusa Portland Cement Co. and former vice president in charge of sales, has been named vice president-commercial. In the same official shift, former assistant general sales manager Robert A. Marshall was appointed general sales manager. Both will have headquarters in Cleveland.

A graduate mechanical engineer from Iowa State University, Mr. Campbell was vice president in charge of white cement sales for Medusa for a number of years.

Mr. Marshall is in charge of sales for all eight plants and eight district sales offices in the U. S. and Canada. A former student at the Harvard Business School, he has been with the company six years.

Manager chosen

SYDNEY J. SMITH has been appointed Central Division sales manager for Kaiser Gypsum Co. Mr. Smith succeeds Joseph M. Angelo, who has been named assistant manager of sales for the company.

Canadian company announces appointments

INLAND CEMENT CO. LTD. has announced the following executive appointments in its Edmonton Division and its subsidiary Saskatchewan Cement Co. Ltd., Regina: George Ross, formerly vice president, Regina, to be vice president, Edmonton Division; Robert D. McLean to be vice president, Saskatchewan Cement Co., Ltd., Regina.

E. J. Cuyler, formerly sales manager at Regina, has been appointed the company's executive sales officer at Edmonton, and R. C. Miller, formerly of the company's Calgary office, replaces Mr. Cuyler as Sales Manager, Saskatchewan Cement Co., Ltd.

Association promotes Richter

JOHN E. RICHTER has been appointed housing specialist in the Los Angeles office of the Portland Cement Association. He succeeds George M. Petzar, who was named district engineer in charge of the association's newly established Phoenix district office. A graduate of the California Institute of Technology, Pasadena, Mr. Richter joined the staff of PCA as field engineer in 1956.

Ideal announces new production personnel

IDEAL CEMENT CO. has announced changes in the organization of its production department, following the resignation of Harley Fleming, southern regional production manager.

Horace Straight will now supervise the plants which were previously in the southern region, including Boettcher, Portland, Tijeras, Ada, Superior, Okay, Houston, Mobile and Baton Rouge, and terminals at New Orleans and Lake Charles.

A. W. Hooton will continue in his capacity as supervisor of plants at Devil's Slide, Trident, Spokane, Redwood City, San Juan, Gold Hill and Grotto and the Sacramento terminal.

Fatality Subcommittee names Leake chairman

WILLIAM P. LEAKE, general superintendent of the Speed, Ind., plant of Louisville Cement Co., has been made chairman of the Fatality Subcommittee of the Portland Cement Association Accident Prevention Committee. Other members serving on the committee are officials of Canada, Columbia-Southern, Dewey, Huron, Ideal, Monarch and Penn-Dixie cement companies. The subcommittee is newly formed to study the fatality problem in the industry.

OBITUA

Robert L. Walk with the Federal Cru died August 8 in Bu

Mr. Walker serve at the company's C ry, finally becomin and a company dir served in various c a son-in-law of one the stone company, Nabb, who died sud before Mr. Walker.

R. A. Hummel, man of the board an Lone Star Cement C City, died August 6

Mr. Hummel joi 1919, serving exte America. He succe Hogan as president 1941 until his electi the board in 1952. H ices as a director an executive committee

Mr. Hummel for as director and chai of the Portland Ce His distinguished c passed citizenship o

A graduate of Cha Technology, Sweden Mr. Hummel was a neer by profession.

Thomas F. Johns the Tom Johnston G burg, Mich., died A Haven, Mich. A me tional Association o men, Mr. Johnsto Michigan State Univ

Francis Potter Wa agent for the Pionee Co., died August 12 ington.

Mr. Watts had be Pioneer since 1945. Purchasing Agents' Washington, he held College of the Pacific and Stanford Univer

Hugh M. McNa secretary treasurer a ager of the Federa Corp., died June 12. of the board of Bitu Corp., a subsidiary of Stone Corp., Buffalo,

ic Consotrol Instrumentation plant at Oro Grande, Calif. ader Foxboro electronic con- installations include petro- a, nuclear reactors, as well 80-mile crude oil pipe line.

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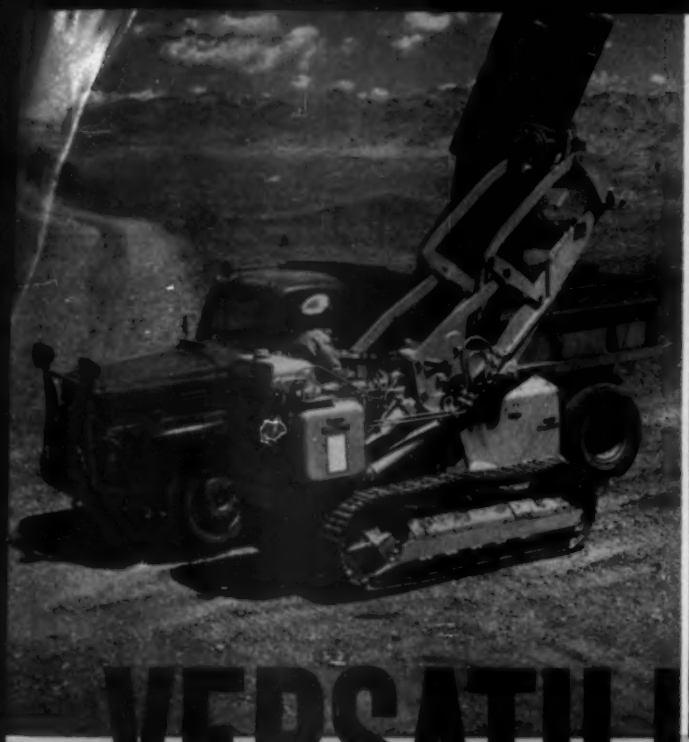
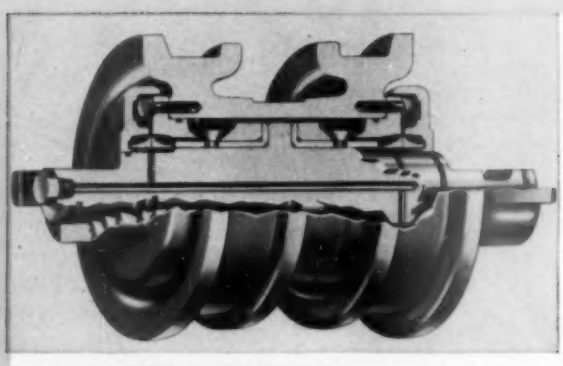


VERSATILITY SPEED

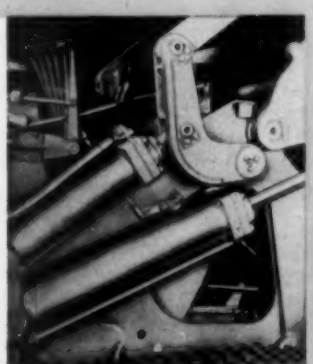
ADD UP TO TOP PRODUCTION

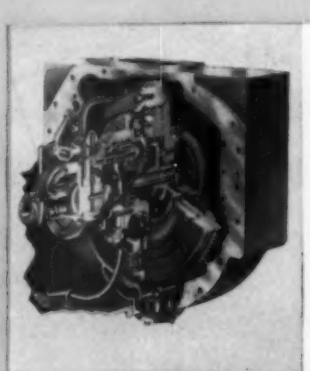
HYDRAULIC TRACK ADJUSTERS standard on the No. 977 and No. 955 —optional on the No. 933. An ordinary grease gun is all that's needed to adjust tracks. Just open the inspection door and apply a few strokes. The hydraulic cylinder does the rest.



LIFETIME LUBRICATED ROLLERS. They need no lubrication servicing until rebuilding. Heat-dissipating oil lubricant is retained by dirtproof floating-ring seal. Eliminate on-the-job roller lubrication. Keep machines on-the-go for longer periods of time.

SMOOTH-FLOW BUCKET CONTROL LEVER. The inside lever is pulled back, lifting the load. It locks in this position until it is kicked out at maximum height by the lift cylinder and linkage. After dumping, both levers are pushed forward. The bucket lowers but only tilts back to an adjustable, preset digging position. Linkage then kicks the outside lever, stopping the bucket tilt.





EXCLUSIVE CATERPILLAR OIL CLUTCH . . . the most advanced clutch design ever offered. Provides up to 2,000 hours without adjustment. This is equal to about 12 months of "adjustment-free" operation. And because wear rate of clutch facing is so slight, down time for clutch repair is almost eliminated.

DEPENDABILITY

IN A TRAXCAVATOR

WHATEVER THE JOB . . . whatever the conditions . . . there's a Caterpillar-built Traxcavator to take charge. Advance design has given this machine a reputation for speed . . . efficiency . . . low operating and maintenance costs. For this is a digging and loading tool; not a tractor attachment.

The line is complete. You get top production from three Traxcavators . . . the No. 933—52 HP, 1⅛ cu. yd. bucket; the No. 955—70 HP, 1½ cu. yd. bucket; the No. 977—100 HP, 2¼ cu. yd. bucket. And there's a complete range of quick-change attachments . . . special buckets, bulldozers, forks, the exclusive side dump bucket and the rear-mounted ripper.

Traxcavators are built to last. They have a heavy steel main frame, welded into a one-piece unit. Box construction track roller frame absorbs the loads and stresses of tough treatment. Lift arms are made to stand up under the strain of heaviest digging conditions.

Traxcavators give you fast action and ease of operation. Excellent stability and balance give better control of the machine. A fast hydraulic system cuts cycle time and increases maneuverability even in close quarters. Visibility is excellent. The high seat puts the operator on "top" of the work. Operator's compartment is uncluttered. Tractor controls are conveniently located for handling ease. Bucket controls are at the right armrest . . . closely spaced for dual operation with one hand.

The reliable Caterpillar Diesel Engine has a fuel-saving injection system and ability for hard lugging. Each engine is matched to the machine for power and bucket size.

All of these features pay off in top production. Let your Caterpillar Dealer help you choose the Traxcavator best suited for your job. Get production facts and figures. And ask for a demonstration.

Caterpillar Tractor Co., Peoria, Illinois, U.S.A.

CATERPILLAR

Caterpillar, Cat and Traxcavator are Registered Trademarks of Caterpillar Tractor Co.

BOOST PRODUCTION AND LOWER COSTS WITH A VERSATILE TRAXCAVATOR

INDUSTRY NEWS

Marquette Cement celebrates official opening of Milwaukee plant

DURING A THREE-DAY gala open house, Marquette Cement Co. introduced its newest cement plant to Milwaukee. Opening of the 10th plant in Marquette's organization coincided with the meeting of the Portland Cement Association's General Technical Committee. This group was among the first to inspect the operation of the compact, 1¼-million-bbl., AC-L kiln system. Plant employes and their families, Wisconsin civic leaders and a number of Marquette's customers were among the more than 1,000 persons who toured the plant.

Marquette also has completed another facility: a new shipping plant at Vicksburg, Miss. Truck deliveries have been started to customers in the area, and facilities for loading cement onto barges will be added, according to H. W. Graupner, head of the sales office.

Predicts over-stimulated residential building spells '60 decline

WALTER C. NELSON of Minneapolis, president of the Mortgage Bankers Association, predicted in a speech at the annual convention that the nation's "over-stimulated" home building industry faces a sharp drop in 1960 from present high levels of activity. He placed the blame for the possible decline on emergency housing legislation passed by Congress last year—it led the industry to over-expand, he said.

Mortgage rates and building costs have risen as a result of "the direct government intervention in home financing," Mr. Nelson declared, envisioning a slow-down of home sales and future construction. Particular blame was attributed to the Federal National Mortgage Association, empowered by the 1958 law to purchase $1-billion worth of government-backed mortgages at par. Exhaustion of the artificial boost of FNMA financing, he said, has contributed to a slowdown on the rate of housing starts. Private housing starts through August 1959 were at an average adjusted annual rate of 1,379,000, following the fourth monthly decline in a row.

Arkansas barite plant schedules March opening

UNITED STATES GLASS & CHEMICAL CORP., Tiffin, Ohio, is constructing a $500,000 barite and gravel plant at Dierks, Ark., where initial capacity will be about 35,000 tons of barite per year. Gravel, a by-product, will amount to about 250,000 tpy. The plant should be ready for operation next March. According to Robert B. McElwaine of Little Rock, consulting mining geologist who will supervise the plant as director of the glass firm's new barite division, this is a step toward diversification for the company, and the barite operation will not be related to the glass operation.

U. S. Glass & Chemical has about 4,600 acres of land under lease in Howard and Sevier Counties, he said. Unlike the Magnet Cove, Ark., barite deposits in which ores containing 55 percent barite are covered by many feet of overburden, "The Dierks ores occur as surface deposits with little or no overburden. They can be mined very cheaply by shallow open-pit methods in which no blasting will be required. These ores normally contain from 10 to 15 percent barite and are relatively easy and inexpensive to mill. A very high quality finished product, including chemical grade barite, can be made from them."

The United States consumes in excess of a million tons of barite annually, and about one-third of this is imported, Mr. McElwaine mentioned. The principal markets are for weighted oil well drilling mud, chemicals, glass, paint, rubber and other industrial products. *(Continued on page 46)*

Enter 1016 on Reader Card

"OUR EAGLE HMS PLANT has solved our chert and soft stone problem"

GILLISSE CONSTRUCTION CO., GRAND RAPIDS, MICH.

To eliminate soft stone and chert from their class B material, to meet Michigan State Highway Dept. specifications, Gillisse Construction Co. uses an Eagle Heavy Media Separation Plant of 50-t.p.h. capacity. Ted Zeeff, Vice Pres., reports "It has solved our chert and soft stone problem. We are pleased with its efficiency and economy. The operator likes its ease of operation."

The Eagle HMS Plant is processing Michigan 6B material (⅜" to 1½") for bridge and overpass construction and 10B (⅜" to 1") for pre-stressed concrete bridge girders. This specification permits only 3% or less of deleterious material. Gravel treated by the Eagle HMS Plant readily meets specs. Sink or beneficiated material runs about 90% and float or rejected material runs about 10%. Rejected material is sold to secondary markets.

The highly efficient O.C.C. separatory vessel used in the Eagle plant will make a float-sink separation on materials with as little as 0.02 difference in specific gravity. If heavy media separation is the answer to your problem, this new high in separating efficiency allows the type of control needed to meet the really tough specification without unnecessary wastage of "good" material.

Gillisse Construction Company, successful aggregate producers for some years, also praises the splendid performance of their Eagle Coarse Material Screw Washer-Dewaterer which processes pea gravel (—⅜"), their Eagle Double Log Washer handling partially crushed gravel, and their Eagle Fine Material Double Screw Washer-Classifier-Dehydrator which handles concrete sand (2NS).

If soft stone or chert is hindering your sales an Eagle HMS Plant can solve your problem. Send a laboratory sample of your material for test—know why before you buy! Send for literature.

From the washing, screening plant in background, ⅜" to 1½" gravel is fed by dump truck to feeder and conveyor to the Eagle HMS Plant in foreground.

EAGLE IRON WORKS

ENGINEERS • MANUFACTURERS

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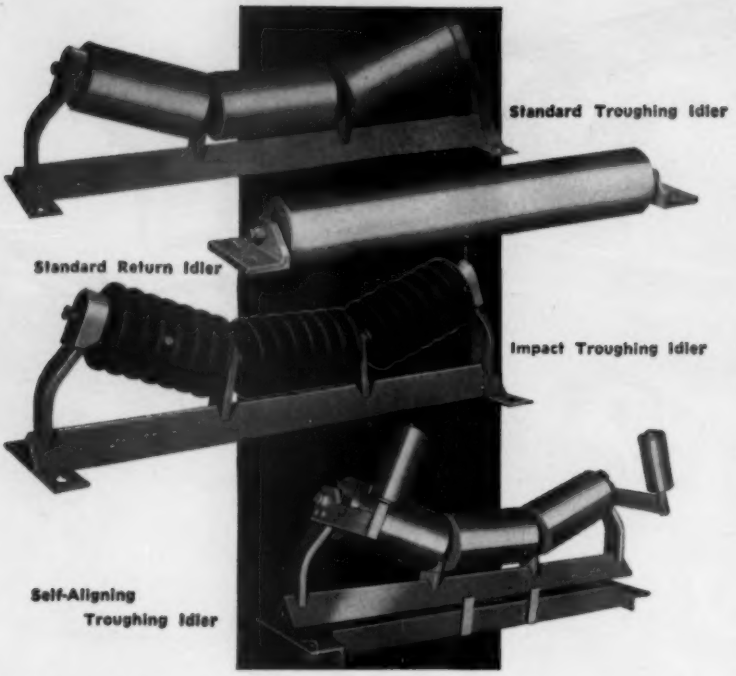
FACTORY-TRAINED DISTRIBUTORS EVERYWHERE



MARCO belt conveyor idlers

INCREASE PROFITS BY HANDLING GREATER LOADS AT LOWEST COSTS...

The advanced engineering ideas incorporated in MARCO conveyor idlers will increase your production and lower your material handling costs.

For example, MARCO idlers have greater load capacity because they are designed with precision ground ball bearings, designed specifically for conveyor idlers. At 300 revolutions per minute, they will carry loads up to 860 lbs. per bearing. These anti-friction bearings give you added years of idler service life and lower power requirements.

Less maintenance: Pre-lubricated, effectively sealed bearings eliminate field lubrication. Self-shedding base keeps material build-up at a minimum. End and center brackets are ½" thick steel, die formed, to eliminate breakage.

Why settle for anything less than the proven economy and efficiency offered by MARCO idlers? Units fit any conveyor frame and are available in many types and sizes. **Ask for bulletin ID-2.**

MARCO — One source for all your Conveyor Needs

Whether you need a complete conveyor, or any conveyor accessory, there is a MARCO product to meet your exact requirements. By relying on MARCO —you save time, trouble and get more for your dollar.

Get the facts from your MARCO distributor or contact E. F. Marsh Engineering Co., St. Louis 10, Mo.

Solid Steel Pulleys
(all-steel, heavy-duty)

All MARCO pulleys offer the outstanding advantages of machined faces and Taper-Lock bushings—at a competitive price.

Self-Cleaning (wing-type) Conveyor Pulleys
(Steel fabricated, jig welded)

Pulley pays for itself many times in longer belt life by discharging 'mis-located' particles before belt can be damaged.

MARCO*

engineered MARCO products:
Tubular Frame Belt Conveyors—Conveyor Idlers—Solid Steel and Self-Cleaning Steel Pulleys—Bucket Elevators—Control Gates—Feeders—Bins.

*Trademark Reg.

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INDUSTRY NEWS

(Continued from page 44)

We dropped some type

THROUGH AN OVERSIGHT, the name of manufacturer of the air-operated Baum jig described in "Air jig saves beneficiating dollars," October ROCK PRODUCTS, p. 106, was omitted. The unit is designed and manufactured by Jeffrey Manufacturing Co.

Portland cement production

PRODUCTION OF FINISHED portland cement in July 1959, as reported by the U. S. Bureau of Mines, totaled 34,182,000 bbl., an increase of 15 percent over July 1958. Mill shipments for the month, at 37,046,000 bbl., rose 15 percent over the year-earlier figure. Stocks of finished portland cement on hand July 31 totaled 30,417,000 bbl., one percent lower than those on hand a year before. Clinker production in July 1959 rose 11 percent over the July 1958 figure to reach 31,292,000 bbl. The figures were provided by 168 plants in 38 states and Puerto Rico.

New owners take over sand, gravel operations

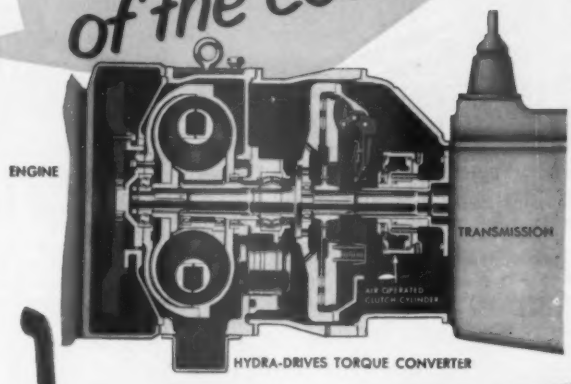
THE GRAVEL PLANT formerly operated by Oregon City Sand and Gravel Co., Gladstone, Ore., has been taken down to make way for modern facilities. The property has been leased by Lakeshore Concrete Co., Oswego, which is constructing a new sand, gravel and concrete plant. Aggregates for the plant will be taken from the Clackamas River bed.

The two gravel pits of O & W Gravel Co., Newburg, Wis., have been sold by Arno and Joe Ubbink, Port Washington, to Nick and Harvey Schmitz, operators of Schmitz Ready-Mix plants at Port Washington and Theinsville. The new owners said the plants will be operated by the same personnel, and the company will be known as O & W Gravel Corp. of Port Washington. *(Continued on page 50)*

HYDRA-DRIVES®

TORQUE CONVERTER WITH A STICK SHIFT TRANSMISSION!

Now! Many Of The Advantages Of Power Shift Transmission *at a fraction of the cost!*

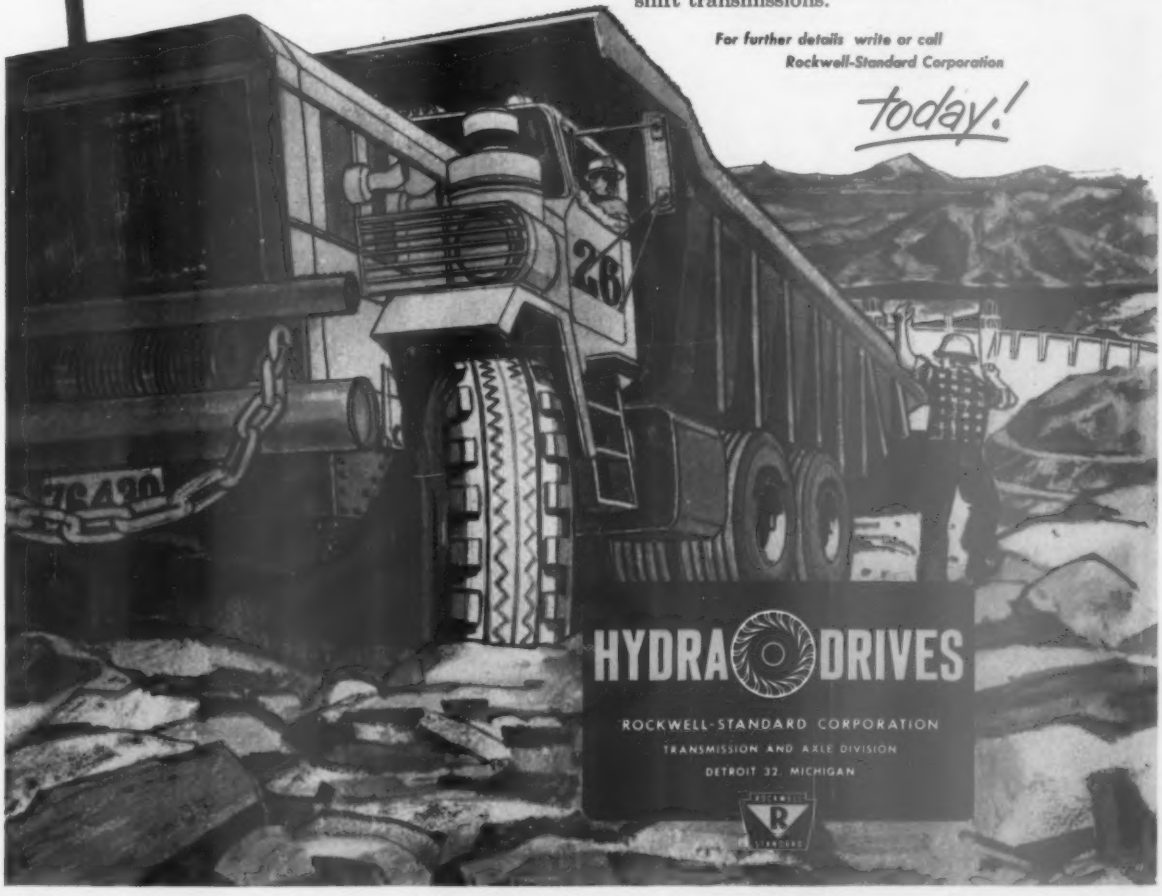


HYDRA-DRIVES TORQUE CONVERTER

Lower in initial costs, Rockwell-Standard's Hydra-Drives Converter with stick shift transmission reduces operating and maintenance costs on heavy-duty off-highway trucks. You get these five major advantages plus many others:

1. Up to 80% of shifting is eliminated. Select a transmission ratio to fit the haul, and let the converter handle the changing load conditions with a minimum of gearing. Any required shifting can be done while truck is in motion!
2. Greatly reduces shock loading on all drive components.
3. Clutch adjustments and wear problems minimized.
4. A minimum of driver training is required.
5. Cost is hundreds of dollars less than full power shift transmissions.

For further details write or call
Rockwell-Standard Corporation
today!



ANOTHER PRODUCT OF **ROCKWELL-STANDARD** CORPORATION

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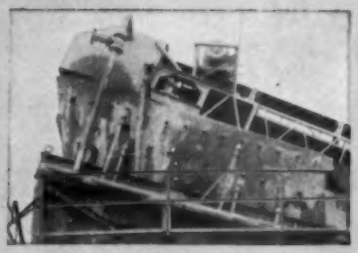
PROFIT THROUGH ...WITH SIMPLICITY

A 4' x 12' and a 4' x 10' Triple Deck Model D Gyrating Screen, set in tandem, performs a final washing and sizing operation. The washed gravel is fed to five storage bins, so that any specification can be met by blending on the conveyor belt underneath these bins.



This Simplicity 5' x 14' Two Deck Model D Gyrating Screen takes its feed from the raw material stock pile via conveyor. All decks have washing sprays. The three products produced of sand and gravel are fed by conveyors to individual stock piles.

Aggregate is carried right from the pit to this Simplicity 3' x 8' Model SG Heavy Duty Scalping Screen. Fines are screened through to the conveyor below, while oversize is scalped to crusher.

ACCURATE SIZING GYRATING SCREENS

4,500 tons of aggregate a day is classified by four Simplicity screens at Holly Sand and Gravel, near Holly, Michigan

Working two shifts of 9 hours each, the Holly Sand and Gravel Company is daily processing 4,500 tons of aggregate, and the firm's General Manager expects to exceed this total in the near future. All this material is sized on four Simplicity screens. Simplicity Model D Gyrating Screens and a Model BG Scalping Screen efficiently and accurately classify the aggregate into grades 10A, 6A, Pea Rock, Torpedo Sand, and Mason Sand. This fast and accurate sizing is typical of the performance of Simplicity Screens throughout the aggregate industry. In addition, a 3' x 6' Model C Single Deck Screen has recently been installed to produce 100% clean Pea Pebbles, by eliminating the buckshot. The Simplicity Gyrating Screen is the original type of mechanically vibrated screen using the counterbalanced eccentric shaft. The counterbalance is machined directly on the shaft, thus giving positive action with perfect smoothness.

Simplicity Gyrating Scalpers are heavy-duty machines built on the same basic principles as the Gyrating Screens, but with a grizzly deck to scalp off the oversize rock. These units are designed to withstand terrific impact. They perform two jobs at once by feeding the oversize into a crusher, and screening the fines.

Wherever you need fast, efficient scalping, screening, or feeding in your aggregate operation, Simplicity equipment can be a big help to you . . . write us today for complete information.

Simplicity
TRADE MARK REGISTERED

ENGINEERING COMPANY • DURAND 13, MICHIGAN

SALES REPRESENTATIVES IN ALL PARTS OF THE U.S.A.
FOR CANADA: Simplicity Materials Handling Limited, Guelph, Ontario
FOR EXPORT: Brown and Sites, 30 Church St., New York 7, N. Y.

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CAPE ANALLOY DROP BALL

outlasts them all!

2,000-12,000 lbs.

A tough abrasive resisting Alloy Steel — **HEAT TREATED** for maximum wear. Field tested for ruggedness and dependability.

All "Cape Ann" **FORGED** Steel Drop Balls fully guaranteed!

CAPE ANN

ANCHOR & FORGE CO.

P. O. BOX 361

GLOUCESTER

MASS.

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INDUSTRY NEWS

(Continued from page 46)

National Gypsum dedicates Waukegan plant, plans others

THE ULTRAMODERN gypsum products plant of National Gypsum Co. was dedicated in formal ceremonies at Waukegan, Ill. Melvin H. Baker, chief executive and board chairman, welcomed visitors who included government and industry leaders, contractors and architects.

The dedication marked another step in the rapid advance of the Buffalo, N. Y., firm which in 34 years has grown from a one-plant, one-product operation into a $300-million industry with 58 plants producing more than 300 products.

The Waukegan plant has been described by Mardis B. Turner, manager, as "the most modern gypsum facility in operation today. From our ship unloading docks to our freight car loading platforms in the warehouse, it's fully automatic."

Other National Gypsum Co. projects: At its Lorain, Ohio, gypsum products plant, first ore shipments have heralded the halfway mark of preparation. A stockpile of the mineral, supplied by the new Tawas City, Mich., quarry, is being accumulated in readiness for the opening of the plant next spring.

The California plant that National Gypsum announced (ROCK PRODUCTS, September 1959) will be its first gypsum operation west of the Rockies, and its largest. The $10-million plant will be erected in Imperial County desert at Coyote Wells, near El Centro. Deposits acquired by the company are said to assure a 100-year gypsum supply. An estimated two years will be needed before the plant is ready for operation.

(Continued on page 52)

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YARDS AHEAD

HEAPS IN A HURRY — cuts minutes from the miles . . . That's why the Curtiss-Wright CW-215 moves the most dirt — makes the most profit for contractors like R. C. Wetherall, shown here working on a West Virginia road job . . . This hustling pair of 215s consistently pack in heaping loads of clay, shale and rock — and really keep the pusher operator hopping to keep up with their fast cycles.

UNUSUAL MACHINE? Not really! You'll find the same high performance in the entire CW line — from the 7 cu. yd. CW-27 to the big CW-226, largest two axle scraper on the market. Check any model against your job requirements . . . put "Yards Ahead" performance to work for you.

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CURTISS-WRIGHT MODEL

215

CW-215 SELF-PROPELLED SCRAPER
Capacities: 15 cu. yds. struck, 21 cu. yds. heaped, 42,000 pound rated load

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at your
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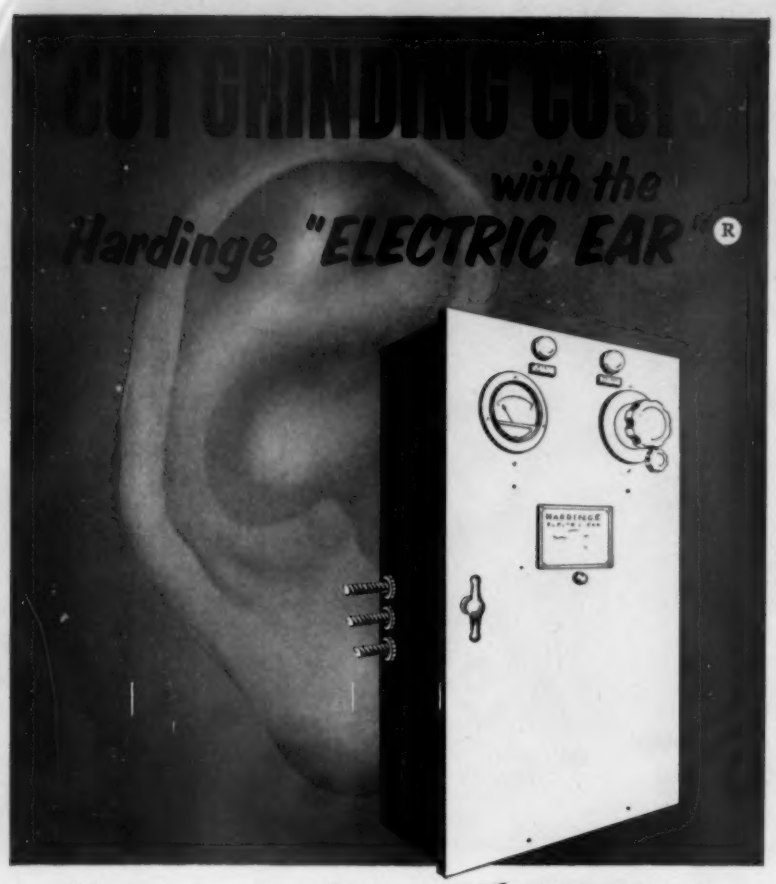

Users report 10 to 15% INCREASE in their GRINDING MILL CAPACITY

In a recent survey of Hardinge "Electric Ear" users, many of them reported 10% to 15% increased grinding mill capacity after installing an "Electric Ear." This unit controls the mill feed, based upon grinding sound level, to produce optimum grinding conditions.

Here are a few typical statements from satisfied customers:

"This unit is doing a remarkable job. It reduces steel and liner consumption. We estimate a savings, with our two units, of $6000 per year on grinding balls and liners. Capacity gained 10%."

"Approximately 25% gain in capacity."

"Helps prevent plug-ups."

"Maintains uniform mill load. Estimated gain in capacity 10%."

"We feel this unit is essential to our operation from a proper quality control standpoint. We would not be able to keep up our present rate of accelerated production and quality without it."

"'Electric Ear' is helpful when inexperienced grinders are learning to operate the mills."

"Eliminates human element in mill feed level."

"Saving per year—$10,000.00."

"Principal reason for 'Electric Ear' use is that it aids the operator, and the mill can be operated from a remote panel."

Write for Hardinge Catalog No. 42A-7.

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(Continued from page 50)

In Canada: kaolin exploration, pozzolan testing

CANADIAN INTERESTS are evaluating the marketability of one of the area's resources, pozzolan, while others are exploring for sizable deposits of another resource, kaolin, to supply an existing market.

The pozzolan outlook is bright, says Toronto's Financial Post. Holdfast Natural Resources Ltd., the Vancouver company which owns and controls the vast deposit of volcanic shale and plans a manufacturing operation, had 2 tons of it processed and sent it out in several lots to prospective customers so they could test the product.

Some also is going to B. C. Research Council, University of British Columbia, for advanced testing and scientific appraisal. According to Wolf G. Bauer, Seattle consulting engineer and pozzolan authority, "This shale may be commercially processed into a high-strength pozzolan for general purposes of concrete improvement, and replacement of cement from 20 to 40 percent by specific volume should be possible."

Ontario kaolin is a prime target in the exploration activity of American Nepheline, Ltd., and its parent company, Ventures, Ltd. They have a three-year license covering 570,000 acres in 11 townships, under which they may search for an exclusive group of nonmetallic minerals. Though deposits have been known for years, this is the first large-scale attempt to determine their commercial possibilities.

Besides kaolin, they hope to find other special clays and silica sands, imports of which altogether have cost Canadian industry $5.3 million annually. As an indication of the importance attached to the exploration, two industrial minerals experts have been employed to take part in it—M. E. Goudge, former chief of the Industrial Minerals Branch, Department of Mines, Ottawa, and Victor Haw, formerly of the same branch.

Pavement yardage

AWARDS OF CONCRETE PAVEMENT for the month of August 1959 and for the first eight months have been classified by Portland Cement Association as follows:

	Sq. yd. awarded during: August	1st 8 Mos.
Roads	2,468,728	38,672,807
Streets & Alleys	4,038,903	23,502,437
Airports	463,661	8,237,793
Totals	6,971,292	70,413,037

(Continued on page 56)

The idlers on Joy Limberope conveyors are Joy Limberollers, the original, patented wire rope idlers. Two bearings are mounted at the ends of a piece of wire rope, to which are molded neoprene discs. The idler is simple, light and self cleaning . . . it cushions the load, improves belt training and belt life.

THE JOY LIMBEROPE® CONVEYOR

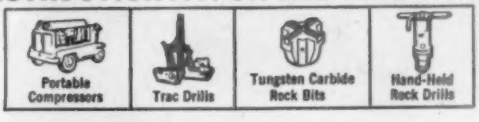
The Joy Limberope Conveyor is a truly flexible belt conveyor which can be set up quickly and stored easily. The belt is supported by idlers which are suspended from two parallel wire ropes. The ropes, in turn, are supported by rugged stands which incorporate the return idlers.

This construction makes it simple to set up the conveyor, or to tear it down and relocate. Additional sections can be added quickly, and there is no engineering involved. Limberope conveyors follow the contours of the land, and bridge gaps readily, making them ideal for cross-country transport of sand, gravel, stone, spoil, concrete and other bulk materials.

Since the conveyor consists only of stands, wire rope, idlers and belt, it can be stored in a very small area when not in use. This simple construction makes it easy and inexpensive to maintain.

For full information on how the Joy Limberope Conveyor can reduce the per-ton cost of transporting bulk materials at job sites, batch plants and quarries, request Joy Bulletin 338-27.

EQUIPMENT FOR CONSTRUCTION . . . FOR ALL INDUSTRY



JOY

Joy Manufacturing Company
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In Canada: Joy Manufacturing Company (Canada) Limited, Galt, Ontario

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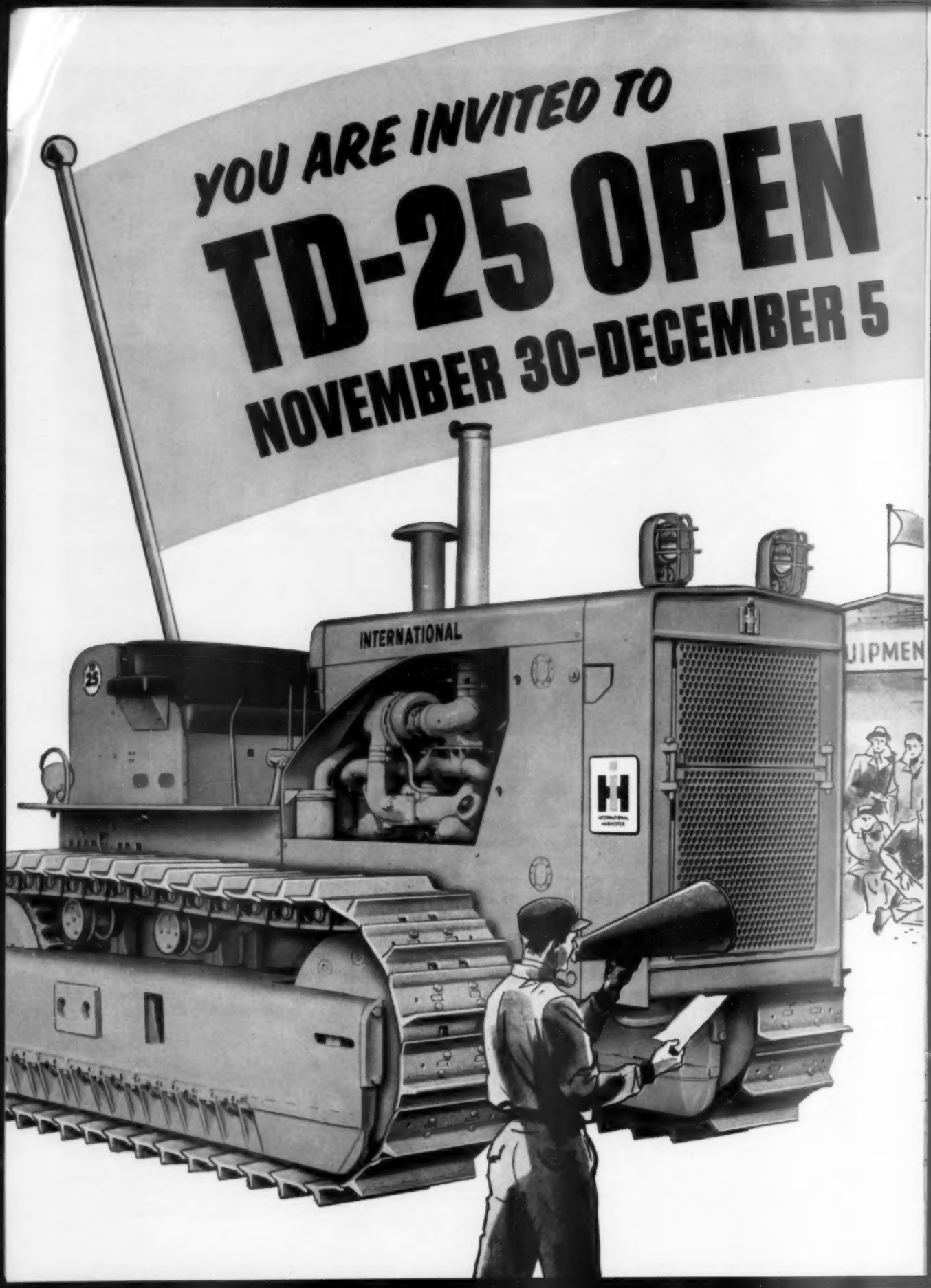
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An open invitation to profit-conscious contractors

At Open House, U.S.A., you won't be viewing "just another big tractor." Not on your life!

This is the big, new International TD-25's "coming out party." And the "25" is coming out "loaded for bear!"

At Open House, U.S.A., you'll preview a king-sized crawler that has more proven, high-output exclusive features than anything else on tracks...The new TD-25 is:

--the only king-sized crawler powered by the new 230-hp, 6-cylinder, direct-start DT-817 diesel--loaded with capacity-adding, life-prolonging features no other engine has!

--the only king-sized crawler with world-proved Planet Power steering, that gives you fingertip power-steering and Hi-Lo, on-the-go power-shifting. Full-time "live" power on both tracks adds payload capacity as no other crawler can!

--the only king-sized crawler with International-developed double-box-beam track frames, the industry's strongest; the only one carried on Dura Rollers--the rollers you can power-lubricate without affecting seal life or efficiency --the ones that make 1,000-hr lube checks practical!

--the only king-sized crawler with so many far-ahead features it can outearn competitive rigs up to 50%, on an amazing variety of tough jobs!

Watch for the word on when and where your Distributor will hold TD-25 Open House, U.S.A. And be there, for sure. Be one of the first to size up the profit-making advantages of the big, new International TD-25.

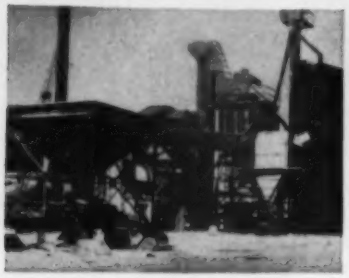
More productive power to you!

International Harvester Company

International® Construction Equipment

International Harvester Co., 180 North Michigan Ave., Chicago 1, Illinois

A COMPLETE POWER PACKAGE: Crawler and Wheel Tractors . . . Self-Propelled Scrapers and Bottom Dump Wagons . . . Crawler and Rubber-Tired Loaders . . . Off-Highway Haulers . . . Diesel and Carbureted Engines . . . Motor Trucks . . . Farm Tractors and Equipment.



5 FULL YEARS
ON STONE DRIER
—HIGH-EFFICIENCY COLLECTION
—NO MAINTENANCE COST!

This Dustex Miniature Cyclone Collector has been on the job at Rock Road Construction Co. in Chicago for five years, and a second Dustex, for four years.

"We have yet to spend any money for maintenance and repair," the firm reports. "You claimed high-efficiency collection and low maintenance costs. Your claims have been fully substantiated."

SEE ACTUAL COLLECTION PERFORMANCE
of Dustex on your site, at no cost or obligation! Write for this Dustex Bulletin, "A Simplified Test Method."

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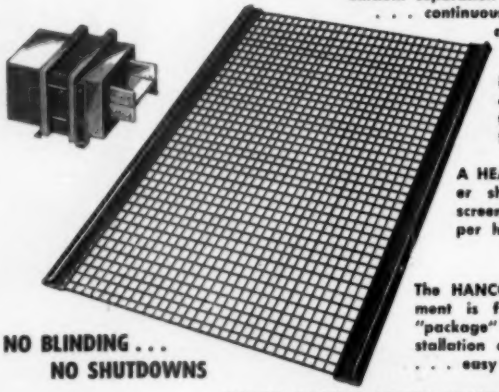
SCREEN MORE TONNAGE PER HOUR
with Hanco ELECTRIC SCREEN HEATERS

A HEATED SCREEN remains open . . . permits efficient separation of materials at all times . . . continuous operation possible day after day



Faster screening is assured since fine moist materials will not adhere to HEATED SCREENS

A HEATED SCREEN means fewer shutdowns . . . longer screen life . . . more tonnage per hour and thus . . . HIGHER PROFITS

The HANCO screen heating attachment is furnished as a complete "package" . . . an average installation consists of only 5 PARTS . . . easy and quick to install

NO BLINDING . . .
NO SHUTDOWNS

HANCO ELECTRIC SCREEN HEATERS are adaptable to virtually all woven screens and can be quickly attached to new or existing single or multiple-deck vibrating screen installations. HANCO models meet all capacity requirements and are ideal for heating either stainless or tempered steel cloth. Your inquiry will receive prompt and effective attention from our experienced engineers whose recommendations will assist you in increasing production and reducing screening costs.

Hanco

WRITE TO
F. R. HANNON & SONS
1605 Waynesburg Rd. SE., Canton 7, Ohio
CABLE ADDRESS: HANCO

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(Continued from page 52)

Acquisitions reported by several firms

MERGERS AND INVESTMENT in new properties, as recently announced, indicate an increasing trend in several corporations toward expansion and diversification. Johns-Manville Corp., New York, added to its industrial empire when it acquired a prominent perlite producer, F. E. Schundler & Co., Joliet, Ill. The transaction involved an exchange of 148,000 shares of J-M stock for all of Schundler's stock. The latter, with seven plants, is a large supplier of perlite and vermiculite products.

Vulcan Materials Co., Birmingham, Ala., has purchased Okolona Stone Co., Okolona, Ky. The crushed stone operation will be included in Vulcan's Lambert Bros. Division.

Concrete Materials and Construction Division, Cedar Rapids, Ia., has announced the acquisition by its parent company, American-Marietta, of the Perry Jones firm, Carbondale, Kan. Fred E. Bellamy, president of Concrete Materials and Construction, said that the Kansas firm will be combined with his division. Perry Jones' personnel will be retained, he said. The purchase adds to the division's holdings some 40 quarry locations, 27 of which maintain stockpiles of materials to serve customers in their areas.

Oregon Portland Cement Co., Portland, Ore., purchased National Industrial Products Corp.'s 20-million-ton deposit of chemical limestone at Durkee, Ore. Described as "the largest known deposit of the highest grade chemical limestone in the Northwest," it is less than a mile from the Union Pacific Railroad and at a low altitude where winter weather is moderate. The cement company said it will quarry and ship rock throughout the area in all seasons.

Osage River sand supplies new plant

A PLANT WITH 80-TPH. CAPACITY has been opened on the Osage River near Wardsville, Mo., by C. W. Roweth Co., Kansas City. A 1½-cu. yd. dragline bucket excavates material from the river, and four sizes of washed sand are produced. The plant, with J. C. Cartland as manager, has its own testing laboratory to enable materials to meet specifications.

(Continued on page 58)

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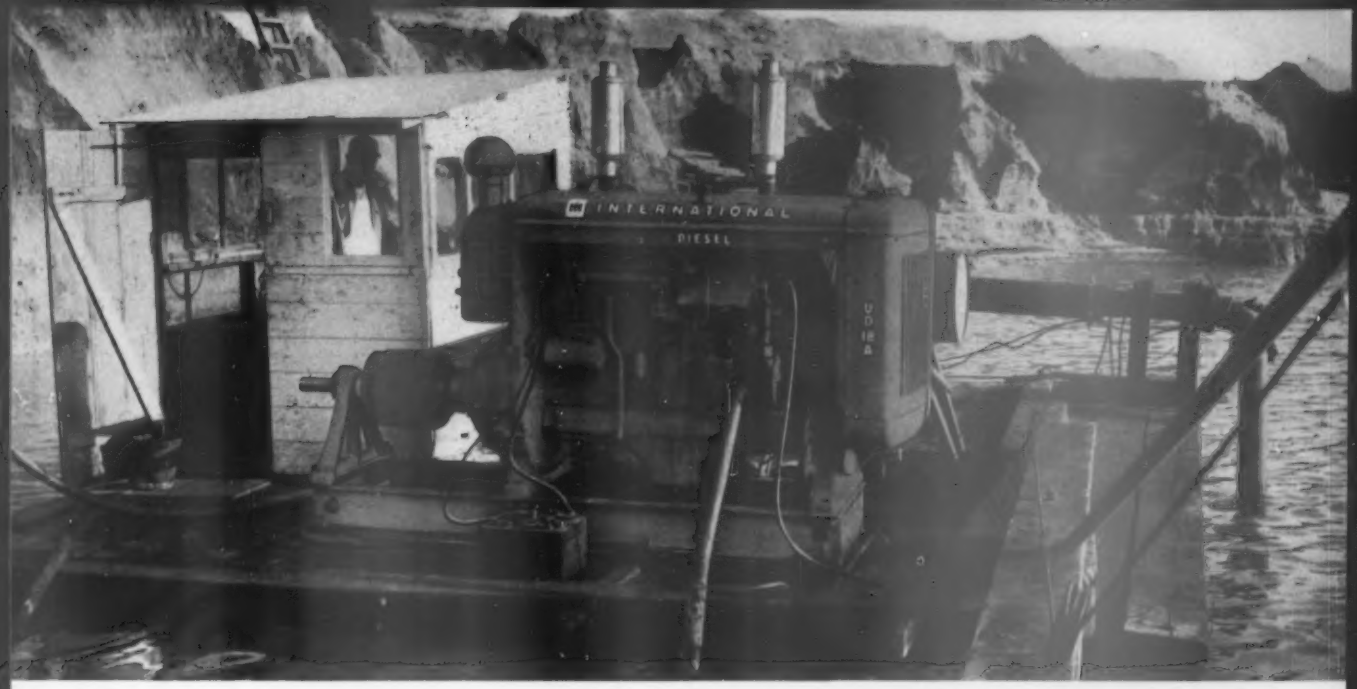


New International UD-18A diesel, 125 rated hp @ 1,600 rpm, drives Island Supply Co., 6-in. sand pump with 48-in. dia. to produce 24 cu. yds. of gravel hourly for Bladen Sand & Gravel Co., Bladen, Nebr.

"We tried and failed to wear out our sand-sucking 12 year old trade-in"

"We needed more power," says Harold Crome, part owner of the Bladen Sand & Gravel Co., Bladen, Nebr., in explaining why his company traded a 12 year old International UD-18 for a new UD-18A pump engine, which delivers 125 rated hp at 1,600 rpm.

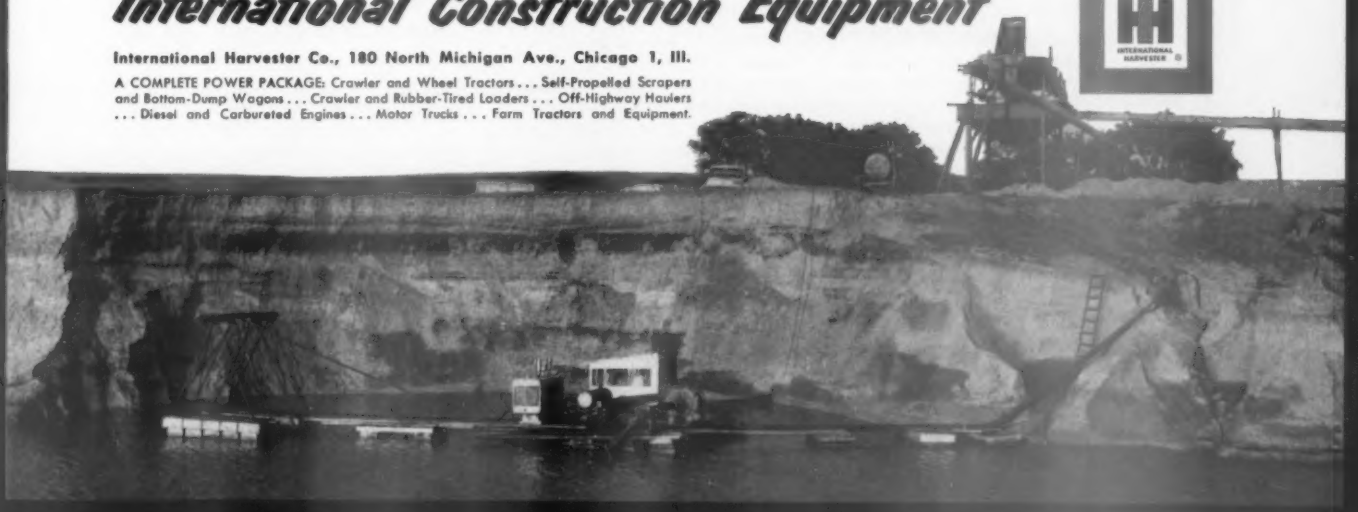
"Twelve years ago we put that UD-18 on our barge to power the big sand pump and we never could wear that sand-sucker out, although we sure tried," he continues. "It ran more than 16,000 hours pumping better than 20,000 yards of gravel each year. We got the additional horsepower we need in this new UD-18A, but whoever gets our old trade-in will get an engine that has at least 12 more good years of service."

If your pit or quarry needs diesel power that can breeze through more than a decade of low-cost dependable service like this UD-18, see your International Power Unit Distributor or Dealer. He sells and services 10 diesel engines ranging from 75 to 385 max. hp that only boost production, never operating costs. You'll find you can't beat the service you get from the power he sells plus the field service support he puts behind International engines on the job. Call him today.

International® Construction Equipment

International Harvester Co., 180 North Michigan Ave., Chicago 1, Ill.

A COMPLETE POWER PACKAGE: Crawler and Wheel Tractors . . . Self-Propelled Scrapers and Bottom-Dump Wagons . . . Crawler and Rubber-Tired Loaders . . . Off-Highway Haulers . . . Diesel and Carbureted Engines . . . Motor Trucks . . . Farm Tractors and Equipment.

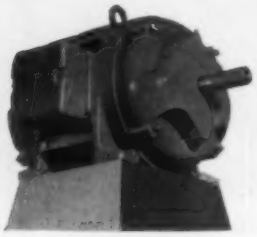


THIS SILICA SAND PLANT

is just the place for

BROOK MOTORS

There is no finer motor built—yet, Brook A.C. Motors cost less. So, aggregate and crushed stone producers save when they buy a Brook motor — and they continue to save because maintenance is no problem. Built for all-weather operation under rugged conditions.



The busy Murray Sand Co., silica sand producers, Murray, Ky., has no time for shut-downs. They use Brook Motors to drive mills, washers, pumps and conveyors. Brook Motors are available in all standard enclosures, 1 to 600 H.P. Warehouse stocks, factory representatives and dealers coast-to-coast.

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"World's most respected motor"

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LET US HELP YOU FIND OUT

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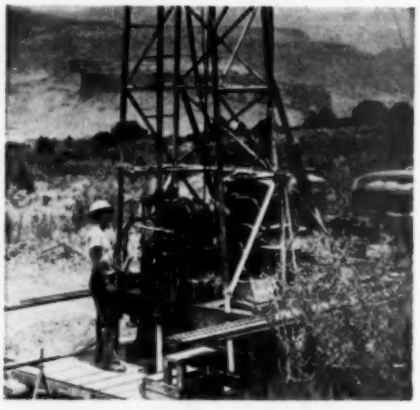

Coal in Kentucky . . . Uranium on the Colorado plateau . . . Bauxite in the Ozarks . . . Limestone in Pennsylvania . . . Copper in Montana . . . These are but a few examples of the extent of our operations. Throughout the United States and even in many foreign countries we have successfully explored and proved ore reserves for our many customers, and where normal methods have failed, special techniques have been developed. In the Gas Hills Area of Wyoming, for example, we successfully cored the loose sand and siltstone where others had failed by "freezing" the material. Our personnel and equipment are stationed throughout the United States awaiting your call.

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INDUSTRY NEWS

(Continued from page 56)

New plants dot rock industries' horizon

IN RECENT WEEKS, several new rock industry plants have been opened or have been put on the drawing boards. Among them: Silica Corporation of America's new plant at Lexington, Ky., which has gone into operation, processing silica taken from deposits along the Kentucky-Virginia border. The company, with lease holdings of 30,000 acres on which there are reserves of more than 3 billion tons, expects to ship 1.5 million tons annually. Tests have proved the silica sand meets exacting specifications for glass, metallurgical, optical and missile uses. Heading the corporation is Ralph B. Campbell, president; plant manager is Arthur Yarberry.

J. G. Shotwell, Flagstaff, Ariz., is constructing a plant for crushing, grinding, screening and classifying pozzolan. It will be used as an additive in concrete going into Glen Canyon Dam. B. B. Bonner, owner of the pozzolan deposit, mines and delivers the pozzolan to the processing plant, located about 35 miles north of Flagstaff. Plant capacity is rated at 30 tph.

A new rock quarry has started operation in the Franklin Mountains near El Paso, Texas. Hondo Pass Material Co., of which W. R. Ackerman is president, will operate the quarry.

Great Western Aggregates Inc., Denver, Colo., a subsidiary of Ideal Cement Co., is locating a new plant for production of Idealite in the foothills between Golden and Boulder, Colo. It will have a production capacity of 300,000 tons of the lightweight aggregate per year, processing 200 tons of shale per hour. The kiln will be 12 x 240 ft.

Fresno County, Calif., gypsum is being mined locally, to be used in correction of alkali in farmlands. James A. Wallace and Associates have set up a plant near Mendota which can process 300 tph. of raw gypsum from deposits uncovered in the Panoche Hills. Purity ratings of the gypsum sold are graded at 40 percent plus and 60 percent plus. Some Fresno County ranchers even use the overburden that had been stripped from the deposits, because its 18-percent gypsum is enough to hold down the alkali on farm areas. This Mendota pit has been operated at minimum capacity until recently when the company's earlier operation, the Coalinga pit, was closed.

(Continued on page 61)

Enter 1083 on Reader Card

Walker Cut Stone Co., Milford, Kansas, replaced *six* smaller overworked gasoline haulers with only two 19-ton Model 65 Payhauler trucks! Their "65's" deliver 150 tons of limestone per hour, from quarry to crusher.

How new rock-ribbed 65 Payhauler® pair

speeds "write-off," replacing six smaller rigs!

—for Walker Cut Stone Co., Milford, Kansas

Two new International 19-ton 65 Payhauler trucks —with the new weight-saving corrugated bodies, and the new 250-hp D-817 diesel engine—have replaced six smaller gasoline trucks for Walker Cut Stone Co., Milford, Kansas.

Results are amazing! Only two operators instead of six to pay! Only 40 gallons of low-cost diesel fuel used daily (total) by the two Payhauler rigs—against several times 40 gallons of high-priced gasoline formerly swilled by the carbureted outfits! And only two machines to maintain, instead of six! "Write-off" of the Payhauler investment speeds in "high gear!"

Payhauler features increase capacity!

Even against competitive haulers of similar rated capacity, the new 65 Payhauler gives you overwhelming advantages!

Of all off-road haulers in its size class, only the 65 Payhauler has the International-developed rock-ribbed corrugated body! This strength-multiplying principle lets the "65" shed 5,000 lbs. of power-wasting weight, and gain a full ton of payload capacity.

Prove the power-to-payload advantages the new rock-ribbed 65 Payhauler delivers! Compare the "65's" cycle-speeding combination of air-assist shifting; 11-second dumping, fast reversing; super-power braking; bonus-leverage, vibration-free power steering! And for 27-ton capacity, note how the 375-hp "95" leads the field. See your International Construction Equipment Distributor for a demonstration!

In only 11 seconds you dump the "65's" 19-ton load —with 3-stage, double-acting, constant-power hoist! Positive up-and-down snubbing guards against impact!

International® Construction Equipment

International Harvester Co., 180 North Michigan Avenue

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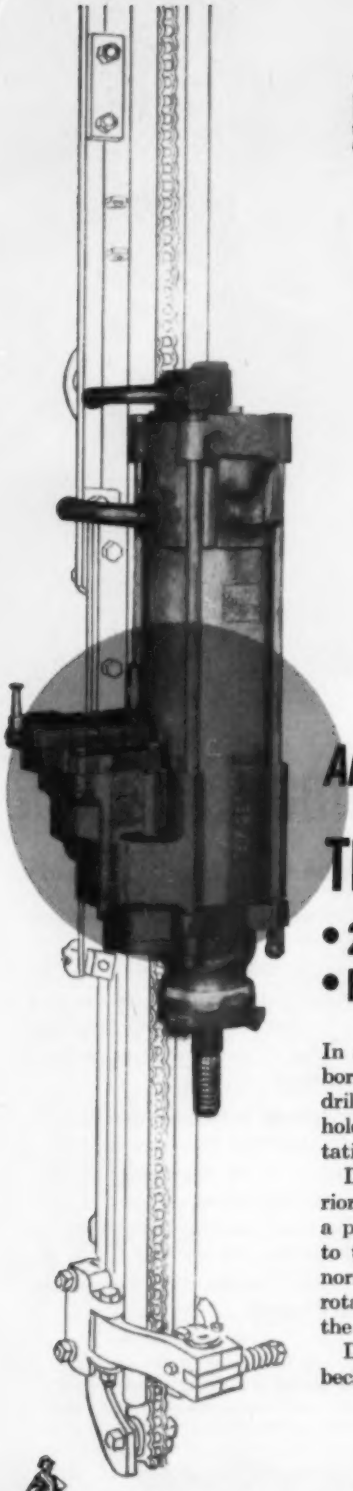
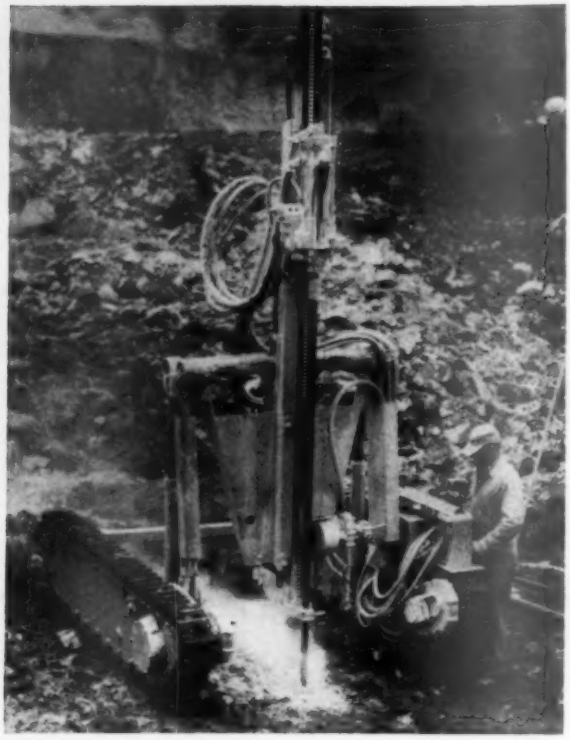


The 450-DR is available on several self-propelled carriers, including the completely automatic TDM Trac-Drill shown at the right.



Another Joy First

The 450 DUAL Rotation Drill

- **25% Higher Drilling Speeds**
- **Faster Steel Changes**

In competitive demonstrations of 4½" bore drills, the new Joy 450-DR not only drilled faster, but also finished blastholes which the conventional reverse rotation machines could not bottom.*

Dual Rotation, which made this superior performance possible, is provided by a powerful vane-type air motor geared to the chuck. It provides a booster to normal drilling rotation, and gives extra rotation power while actually reducing the strain on the rifle bar.

Dual Rotation will also cut your costs because (1) there is no hammering action while coupling or uncoupling—drill steel threads, couplings and striking bars last longer; (2) all four pawls in the 450-DR are used only for forward rotation, not two for drilling and two for reversing—excessive pawl wear is eliminated; and (3) with Dual Rotation, reversing is not rifle bar actuated, therefore rifle nuts cannot back off—less downtime.

Let us prove the superiority of the new Joy 450-DR Drill. Your nearest Joy Office or Distributor will be glad to arrange a demonstration of this remarkable new drill.

*Competitive test results available upon request.

C 7577-916

JOY CONSTRUCTION EQUIPMENT IS SOLD AND SERVICED BY THE JOY DISTRIBUTOR IN YOUR AREA

JOY

Joy Manufacturing Company
Oliver Building, Pittsburgh 22, Pa.

In Canada: Joy Manufacturing Company (Canada) Limited, Galt, Ontario

Portable Compressors	Trac Drills	Tungsten Carbide Rock Bits	Hand-Held Rock Drills

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(Continued from page 58)

Mineralite licensee in U. S. sought by European firm

KENDELL'S STONE & PAVING CO. LTD., a British firm that holds the world rights outside Scandinavia for production of mineralite, has notified ROCK PRODUCTS of its desire to locate an American firm that can be licensed for mineralite production. Introduced several years ago in Scandinavia and later in Great Britain, mineralite is a fine exposed aggregate finish made up as a dry mix and sold in bags. It provides a decorative finish for precast concrete—all the user has to do is add water. The texture of units produced is obtained by using felt pads in the molds. (See CONCRETE PRODUCTS for a discussion of mineralite, June 1959, p. 44.)

According to T. B. Smith, managing director of Kendell's, a number of American architects have expressed interest in mineralite. Any organization that would be willing to promote sales of decorative cladding units, and has interest in site application of the textured finish, is invited to contact Mr. Smith at company headquarters: Barnettwood Lane, Leatherhead, Surrey, England.

Silo contracts awarded for Texas, Oklahoma plants

MACDONALD ENGINEERING CO. has been awarded the contracts for design and construction of silos for both the Texas Industries, Inc., plant at Midlothian, Texas, and the Oklahoma Cement Co. plant at Pryor, Okla.

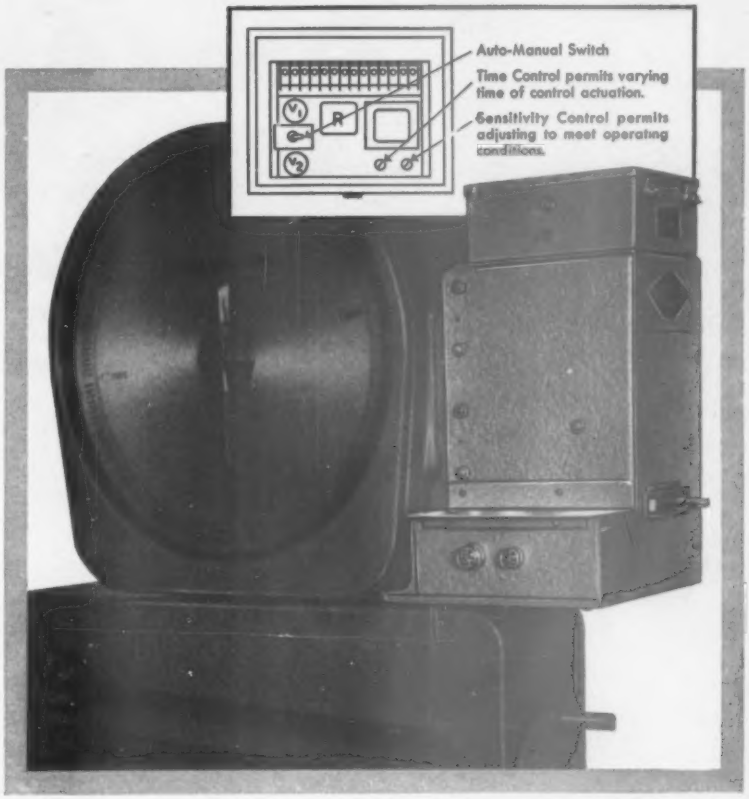
Silos at Midlothian's wet-process plant includes six 30-ft. diam. x 50 ft. high slurry tanks, two 32-ft. diam. x 66 ft. high clinker silos and two silos for gypsum and sand, 23-ft. diam. x 66 ft. high.

Eight finished cement storage silos, 30 ft. diam. x 106 ft. high, will hold 110,000 bbl. The bins have steel cone hopper bottoms for self cleaning; they will discharge to air slides for withdrawal of the cement via bucket elevator to the packhouse.

At the Pryor plant of Oklahoma Cement, three raw-material blending silos will be 32 ft. diam. x 48 ft. high. They will have flat bottoms and aeration pads to homogenize the material. Six cement storage silos, 33 ft. diam. x 131 ft. high, will have steel cone hopper bottoms, discharging into air slides and bucket elevator for loading into bulk cars and trucks.

(Continued on page 64)

NEW Fairbanks-Morse Electronic Weight Detector


Auto-Manual Switch
Time Control permits varying time of control actuation.
Sensitivity Control permits adjusting to meet operating conditions.

Prevents incorrect weighing . . . stops costly errors!

With the new Electronic Weight Detector, true weight of any load can be automatically obtained and recorded without need of a weighman. Where a weighman is used, it is impossible for him to record incorrect weights or start a sequence at the wrong time. When desired, a flip of the switch can disengage the Weight Detector entirely from the system. *This is the first fully-reliable control of its kind available in the scale industry.*

To completely automate your weighing—to be sure that your weights are correct—to protect yourself by completely policing your entire weighing operation—contact your nearby Fairbanks-Morse Field Engineer, or write directly to Fairbanks, Morse & Co., 600 South Michigan Ave., Chicago 5, Illinois for complete information.

See Sweet's Plant Engineering File for full line of F-M Scales

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a name worth remembering when you want the BEST

SCALES • PUMPS • DIESEL, DUAL FUEL AND GAS ENGINES • ELECTRIC MOTORS GENERATORS • COMPRESSORS • MAGNETOS • HOME WATER SYSTEMS

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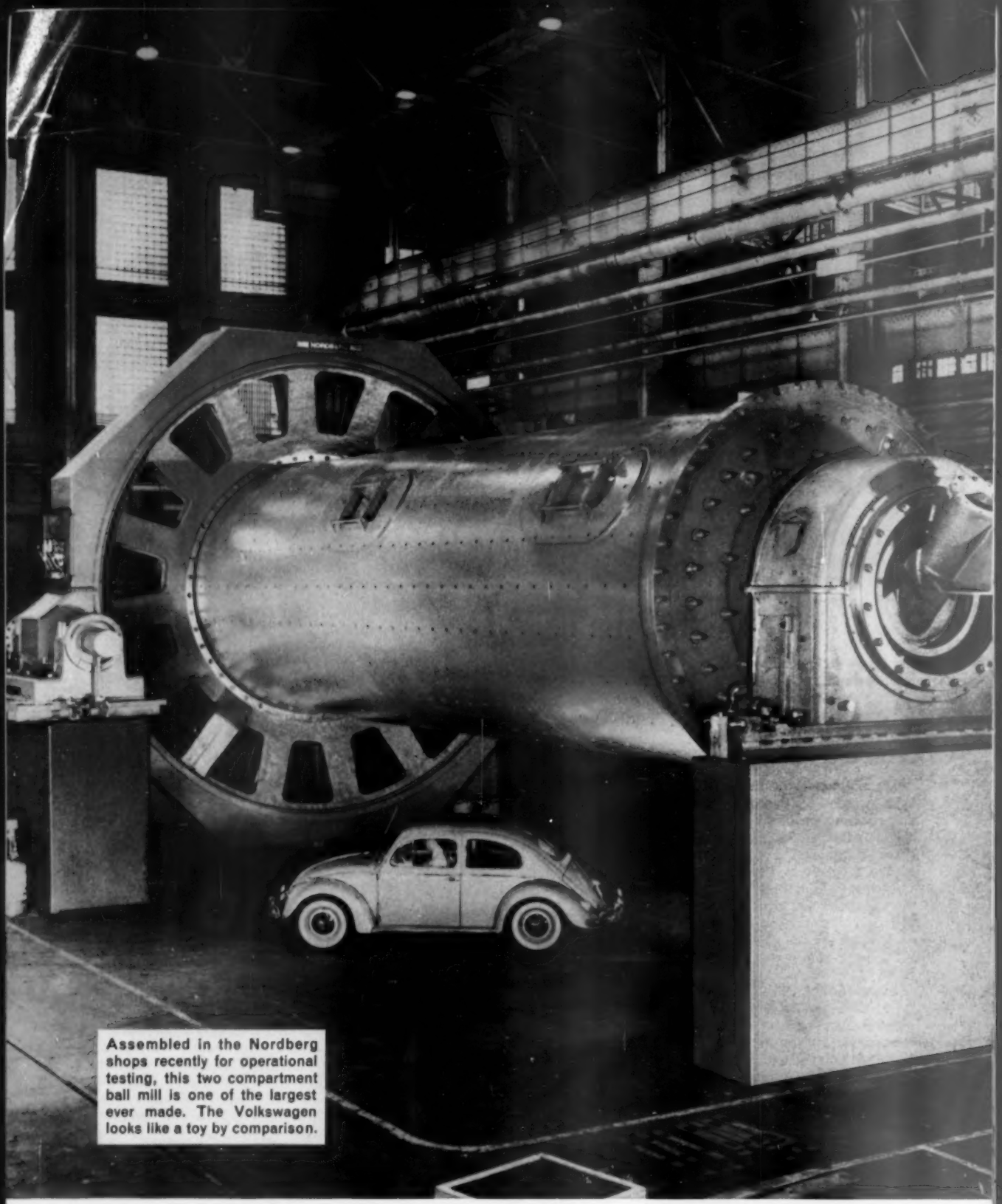
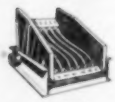


Assembled in the Nordberg shops recently for operational testing, this two compartment ball mill is one of the largest ever made. The Volkswagen looks like a toy by comparison.

SYMONS PRIMARY GYRATORY CRUSHERS

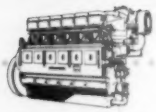
SYMONS® CONE CRUSHERS

SYMONS VIBRATING SCREENS



SYMONS VIBRATING GRIZZLIES

ROTARY KILNS and COOLERS



NORDBERG ENGINES

NORDBERG sets the pace in LARGE GRINDING MILLS

to turn out greater tonnages at lower cost per ton

Nordberg has recently completed five of the largest grinding mills ever built for industrial service. These two compartment Nordberg ball mills (see opposite page) are 12 feet in diameter by 36 feet long, each powered by a 2500 hp synchronous motor, operating at 10% beyond rating. These mills are being installed in a new 5 million barrel per year wet process cement plant. The economies of using very large grinding mills to turn out greater tonnages at lower cost are important, however, to many other large ore and mineral reduction processes, as well.

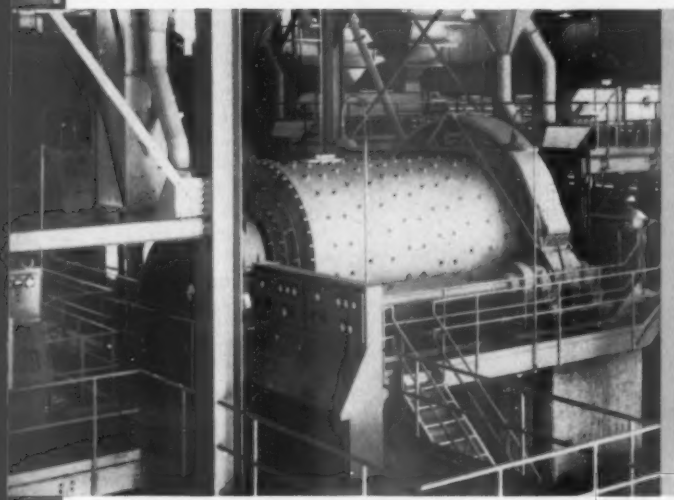
Consider some of these basic advantages:

1. *Lower construction and installation costs* . . . A single, large mill requires less floor space than several smaller ones, and only one foundation is required. Thus, construction costs are lowered and, in most cases, production is increased.

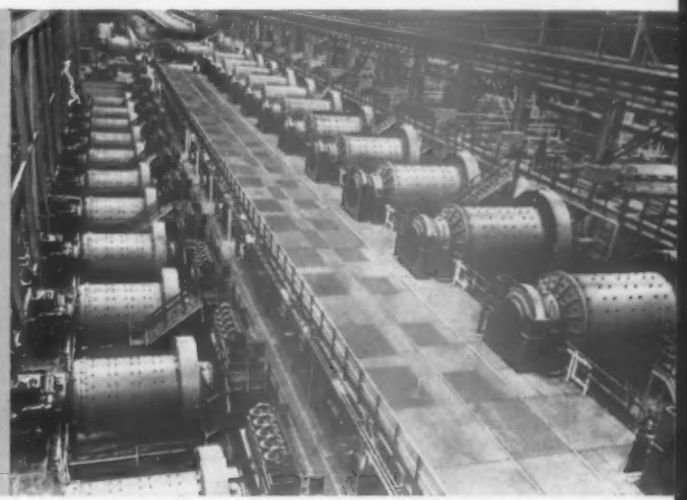
2. *Simpler automatic operation* . . . Where automatic operation is required, larger mills permit simpler handling with fewer controls. This lowers initial investment and minimizes installation and operational problems of automatic controls.

3. *Less maintenance* . . . Here, costs are again related directly to the number of mills installed. Fewer units mean less wearing parts and more dependable production. Exceptional savings may also be realized in replacement liners alone.

These are significant reasons behind the current trend toward larger grinding mills. But whether you require large or small grinding mills, you can count on the proven experience of Nordberg in furnishing the right grinding mill to meet your specific needs . . . including Rod, Ball, Pebble, Tube and Compartment types, in sizes from 6 to 13 feet in diameter and up to 50 feet in length. *Write for further information.*



Shown here are two of five 11′ x 17′ Nordberg Ball Mills—three raw and two finish—installed in a midwest cement plant that has a capacity of 3,000,000 bbl. annually.



The largest iron ore mill installation in the world with 58 Nordberg Grinding Mills. This concentrator building houses 27, 10′ x 14′ rod mills and 27, 10′ x 14′ ball mills. Four Nordberg mills serve as standby units.

NORDBERG MANUFACTURING COMPANY, Milwaukee 1, Wis.

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ANY WAY YOU LOOK AT IT...

NEW

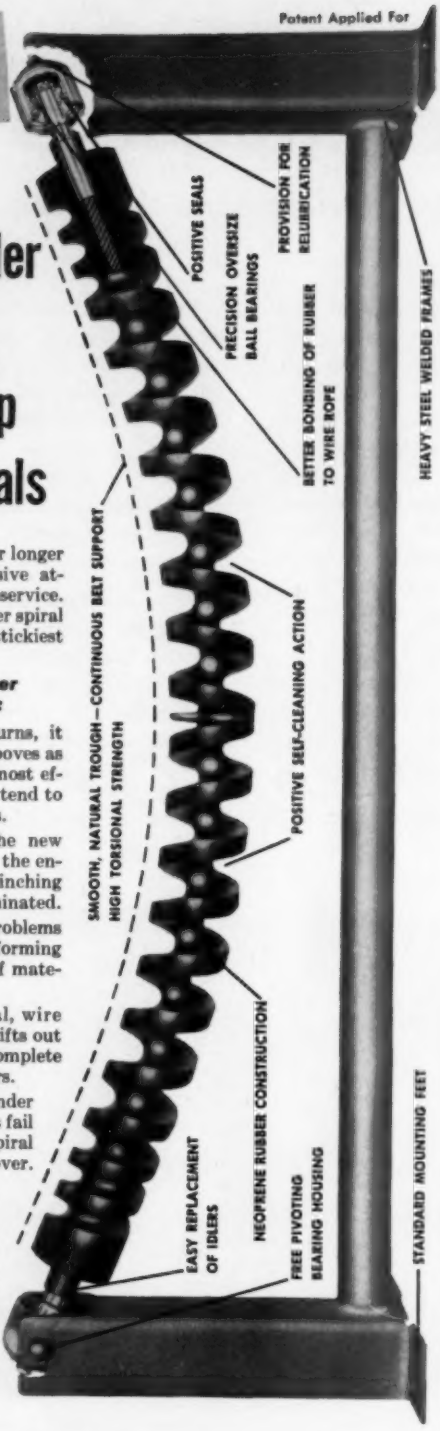
Rubber Spiral Idler lasts far longer, prevents build-up of sticky materials

This new rubber spiral idler lasts far longer than conventional idlers in corrosive atmospheres or exceptionally abrasive service. And its exclusive self-cleaning rubber spiral prevents build-up of even the stickiest materials.

Here are some of the rubber spiral idler's advantages:

- **SELF CLEANING.** As the spiral turns, it "works" any material out of the grooves as they change shape. This action is most effective with sticky materials which tend to build up on common types of idlers.
- **CONTINUOUS BELT SUPPORT.** The new rubber spiral design "moves" along the entire width of the belt; therefore, pinching and sharp bending of the belt are eliminated.
- **SELF TRAINING.** Belt training problems are greatly reduced by readily conforming rubber spiral, and by elimination of material build-up.
- **EASY REPLACEMENT.** The spiral, wire rope, and bearing assembly simply lifts out of its brackets—no tools needed. Complete idler fits standard conveyer stringers.
- **TRUE OPERATING ECONOMY.** Under conditions where conventional idlers fail prematurely, the Hewitt-Robins spiral idler will pay for itself many times over.

Deliveries of this revolutionary new idler are now being made in 18, 24, 30, and 36 inch belt sizes. In addition to the type shown, it is also furnished with a spreader frame for use in wire rope conveyor systems. For further information check your H-R distributor, or write Hewitt-Robins, Stamford, Connecticut. Ask for Bulletin 11-19.



HR HEWITT-ROBINS

CONVEYOR BELTING AND IDLERS...POWER TRANSMISSION DRIVES
INDUSTRIAL HOSE...VIBRATING CONVEYORS, SCREENS & SHAKEOUTS

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INDUSTRY NEWS

(Continued from page 61)

Expansions at USG involve gypsum development, plants

BESIDES A NEW LIME PLANT at New Orleans, enlargement of its gypsum board plant at Jacksonville, Fla., and development of a gypsum deposit in Central Mexico have been scheduled by U. S. Gypsum Co., Chicago, Ill. Construction also will start soon on a new 50,000-sq. ft. warehouse at Fremont, Calif., for distribution of gypsum products to San Francisco Bay area customers.

The New Orleans plant, announced in October '59 ROCK PRODUCTS will produce high-purity quicklime and hydrated lime products from locally available shells. It will serve Mississippi and Louisiana markets for lime.

The company will spend $1 million to develop its billion-ton gypsum deposit in Mexico, said Clarence H. Shaver, chairman of the board. The deposit is located about 200 miles west of Tampico.

Heavier demand for wallboard, plaster base and gypsum sheathing in Florida and the Southeast made the Jacksonville plant expansion necessary, said Mr. Shaver. Capacity has been increased by 25 percent.

In the Midwest, work is proceeding at USG's Sperry, Iowa, gypsum mine. In recent weeks, the mine yielded its first rock as workers tunneled from the ventilating shaft to the main shaft 300 ft. away. The rock was stockpiled to provide the initial supply of ore when the plant opens early in 1960.

Part of the Sperry gypsum will be converted to wallboard, plaster base and sheathing; some will go to portland cement manufacturers. Frank C. Appleyard, manager of mines at USG, said that the Sperry operation will be one of the deepest gypsum mines in the United States. At 600 ft., it is second only to the 775-ft.-deep mine the company operates at Plasterco, Va.

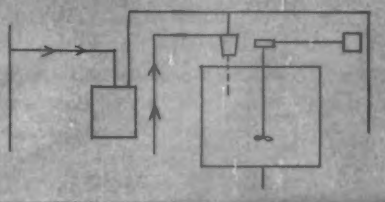
Great Northern reports minerals along its route

GREAT NORTHERN RAILWAY has reported the surveying and mapping of "significant deposits" of nonmetallic minerals along its Great Falls-Billings line in Montana. The area abounds in clay, shale, bentonite, silica, sand, gypsum, limestone and gravel. Deposits include a 2-million-ton supply of gypsum ore and several chemically acceptable limestone deposits of more than 4 million tons.

(Continued on page 66)

IT PAYS TO ENGINEER YOUR PLANT!

to get the ***most*** *from your plant investment dollar*



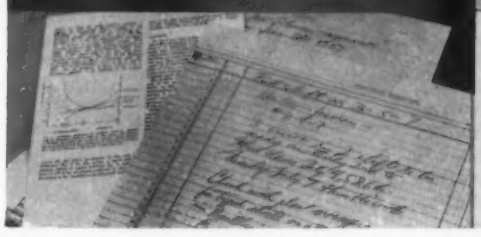
Sure, *you* can design and develop your own plant . . . *BUT* the question is, can you afford the time to search for the right, most profitable combination of plant development, equipment and processes to do the job?

You can hire the complete WKE Staff and with it bring to your organization complete experience and knowledge of materials, methods, labor, equipment, sources of supply—and management of endless factors.

You'll have the benefit of knowledge and experience gained in designing, specifying and engineering for dozens of other projects. A full staff of specialist engineers—design, process, civil, structural, mechanical, electrical, piping—will be at your service to see that you get full value from every dollar spent.

Contact a WKE office today. The WKE record of design and engineering experience will work profitably on your team.

DESIGN AND ENGINEERING



WESTERN-KNAPP ENGINEERING CO.

SAN FRANCISCO	NEW YORK	CHICAGO	HIBBING
650 FIFTH ST	90 CHURCH ST	431 S. DEARBORN ST	9133 FOURTH AVE., EAST
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WHICH 3 OF THESE USED EQUIPMENT BUYS IS BEST FOR YOU?

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1 **A "BONDED BUY"** on used Cat-built equipment is your safest buy. A bonded guarantee, up to $10,000, of satisfactory performance on *all* parts is given when you purchase a "Bonded Buy" used Cat-built machine.

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Caterpillar Tractor Co., Peoria, Illinois, U.S.A.

CATERPILLAR

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BEST BUYS IN NEW AND USED EQUIPMENT

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INDUSTRY NEWS

(Continued from page 64)

Calaveras Cement speeds up cement loading

AT THE SAN ANDREAS, CALIF., plant of Calaveras Cement Co., new bulk cement facilities have been added to existing loading facilities, making possible the simultaneous loading of three

bulk-cement trucks, two sack-cement trucks and a railroad car.

Two 25-ft. diam. steel bulk loading tanks, each with 2,700-bbl. capacity, are located above a 10 x 60 ft. truck scale so that cement may be discharged directly by gravity to the bulk truck waiting on the scale.

Cement is pumped 350 ft. from storage silos into the bulk-loading bins by a 10-in. cement pump which keeps them continually replenished. One man on a platform below the bins controls the flow of cement to trucks on the scale below. The new facilities were designed by J. C. Powell, plant engineer. The tanks were designed, fabricated and erected by Chicago Bridge & Iron Co.

New fertilizer plants use western phosphate rock

A BIG MARKET for phosphate rock —fertilizer—opened near Montpelier, Idaho, with the dedication of the new superphosphate plant of Central Farmers Fertilizer Co. The $16-million facility will produce 140,000 tons of superphosphates for agricultural use yearly, using elemental phosphorus.

The firm is owned by National Farm Bureau Federation and farm cooperative associations in the United States. Its 35,000-kw. elemental furnace is one of the largest in the nation, but present output will fill only about 15 percent of the shareholders' requirements. Therefore, officials are exploring possibilities of expansion by enlarging furnace capacity.

Supplying phosphate rock for the operation is Wells Cargo, Inc. Central Farmers also has rock holdings not yet developed.

Another big user of western phosphate rock will be Bunker Hill Co., which recently announced plans to construct a $10-million fertilizer plant in Kellogg, Idaho. Starting capacity would be 230 tons per day, said John D. Bradley, president. The fertilizer will be made from phosphate rock from Montana and sulfuric acid supplied from the company's lead and zinc reduction operations at Kellogg.

(Continued on page 70)

STATEMENT REQUIRED BY THE ACT OF AUGUST 24, 1912, AS AMENDED BY THE ACTS OF MARCH 3, 1933, AND JULY 2, 1946. (Title 39, United States Code, Section 233) SHOWING THE OWNERSHIP, MANAGEMENT, AND CIRCULATION OF ROCK PRODUCTS, published monthly at Chicago, Ill., for October 1, 1959.

1. The names and addresses of the publisher, editor, managing editor, and business manager are:

Publisher—Maclean-Hunter Publishing Corp., 79 W. Monroe St., Chicago 3, Ill.

Editor—George C. Lindsay, 79 W. Monroe St., Chicago 3, Ill.

Managing Editor—Charles R. Kluge, 79 W. Monroe St., Chicago 3, Ill.

Business Manager—P. D. Allen, 79 W. Monroe St., Chicago 3, Ill.

2. The owner is: (If owned by a corporation, its name and address must be stated and also immediately thereunder the names and addresses of stockholders owning or holding 1 percent or more of total amount of stock. If not owned by a corporation, the names and addresses of the individual owners must be given. If owned by a partnership or other unincorporated firm, its name and address, as well as that of each individual member, must be given.)

Maclean-Hunter Publishing Corp., 79 W. Monroe St., Chicago 3, Ill. The stockholders of the Maclean-Hunter Publishing Corp. are P. D. Allen, 255 Locust Rd., Winnetka, Ill.; Joseph J. O'Neill, 14 Lincoln Court, Lombard, Ill.; F. S. Chalmers, 755 Avenue Rd., Toronto, Ont., Canada; Horace T. Hunter, 120 Inglewood Drive, Toronto, Ont., Canada; Maclean-Hunter Publishing Co., Ltd., 481 University Ave., Toronto, Ont., Canada.

3. The known bondholders, mortgagees, and other security holders owning or holding 1 percent or more of total amount of bonds, mortgages, or other securities are: (If there are none, so state.)

None.

4. Paragraphs 2 and 3 include, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting; also the statements in the two paragraphs show the affiant's full knowledge and belief as to the circumstances and conditions under which the stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner.

5. The average number of copies of each issue of this publication sold or distributed, through the mails or otherwise, to paid subscribers during the 12 months preceding the date shown above was: (This information is required from daily, weekly, semiweekly, and triweekly newspapers only.) . . .

P. D. Allen
Publisher

Sworn to and subscribed before me this 17th day of September, 1959

[SEAL]

Clara M. Brockschmidt

(My commission expires March 16, 1960.)

ONLY GARDNER-DENVER ROTARIES

Give you all these field-proved portable compressor advantages

Left to right, Models RP125, RP210, RP365, RP600, RP900.

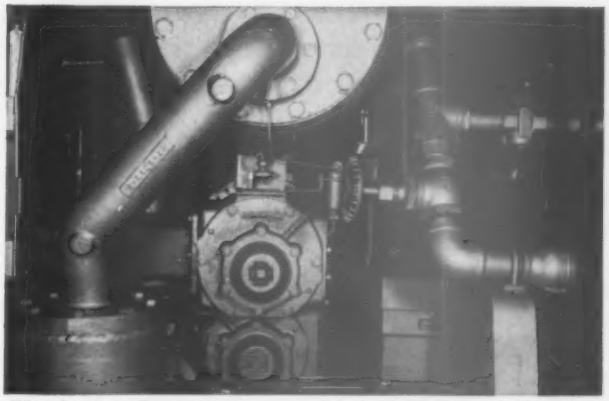
Safe, sure all-weather operation—water-oil cooling system keeps engine and compressor temperature constant.

Lubricated cold-weather starting—clutch allows compressor oil to be warmed before engaging compressor.

Positive flood lubrication—instantaneous oil flow not dependent on receiver pressure.

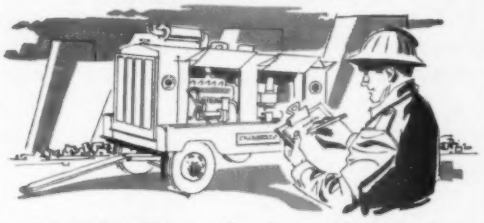
Fuel economy plus—exclusive Gardner-Denver "THRIFTMETER"® saves fuel, saves wear and tear on engine and compressor.

Simplified field maintenance—all compressor parts are easy to get to, making inspection and field maintenance faster and easier. See your Gardner-Denver distributor or write for bulletin.



The Gardner-Denver rotary requires no major dismantling job for inspection of working parts. Only a few minutes are required to remove the 12 cap screws to expose all the blades for routine inspection or replacement that assures trouble-free operation.

KEEPING TAB ON PROGRESS



At Gardner-Denver there's no substitute for men—our philosophy of growth for 100 years. Gardner-Denver engineers know your field from field experience . . . keep in constant touch with men and machinery . . . seek new ways of developing surer, safer, more productive equipment.

Gardner-Denver RP900's on Glen Canyon diversion tunnel job provide trouble-free air for all phases of this major project.

GARDNER-DENVER Since 1859 — 100 1959 YEARS

EQUIPMENT TODAY FOR THE CHALLENGE OF TOMORROW

GARDNER - DENVER

Gardner-Denver Company, Quincy, Illinois

In Canada: Gardner-Denver Company (Canada), Ltd., 14 Curity Avenue, Toronto 16, Ont.

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The Positive Seal
PERMA-SAFE
Wheel

Truck wheels, front idlers, support rollers on all models of Allis-Chalmers crawler tractors

Lubricated at factory need no further greasing

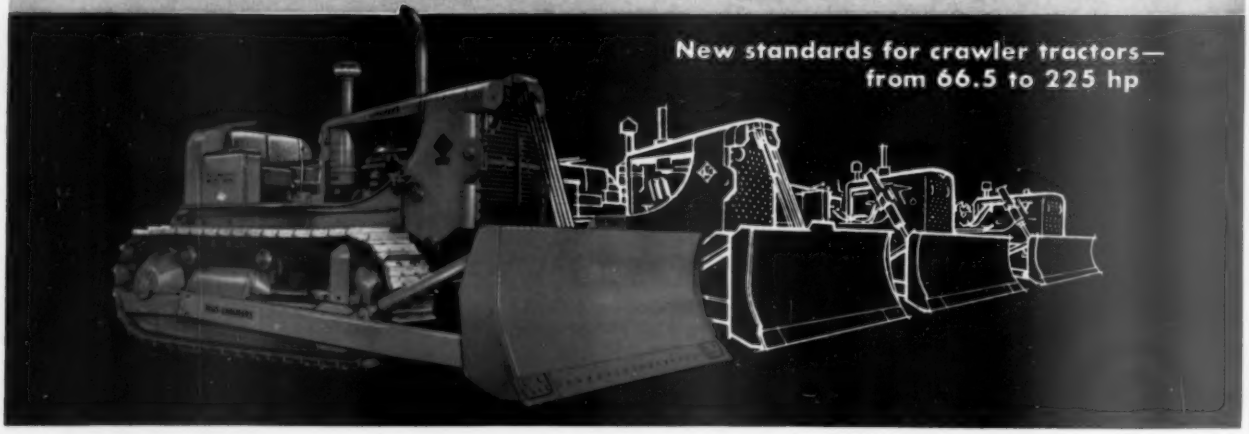
Every Allis-Chalmers crawler tractor—whether produced today or any time during the past 17 years—offers its owner the twin secrets of permanent lubrication.

1

Allis-Chalmers tapered roller bearing wheels roll much more freely than ordinary bushing types . . . reduce power-robbing friction . . . give you more of your engine's horsepower at the drawbar or moldboard where it pays off in production. The tapered roller bearings maintain precise alignment of all parts . . . protect the perfect seal by minimizing side thrust and wobble . . . eliminate the uneven wear that makes positive sealing of bushing-type assemblies impractical.

2

The "Positive Seal" that makes permanent lubrication possible is effected by two steel sealing rings working in combination with the tapered roller bearings. These two rings, smoother than glass, are held firmly together by strong steel coil springs. One seal remains stationary; the other turns with the truck wheel. These seals are micro-finished to near perfect flatness. Their surfaces fit together so precisely that nothing can get through . . . a perfect seal.



Safe, permanent lubrication of truck wheels, front idlers and support rollers requires seals that will keep all moisture and other foreign materials out . . . the lubricant in. Only Allis-Chalmers offers seals which are positive because of their use in combination with tapered roller bearings. The Allis-Chalmers Positive Seal, tapered roller bearing design has been proved in the field through more than 20 years . . . through millions upon millions of operating hours. When introduced in 1938, this outstanding design replaced bushing-type assemblies similar to those used today in other tractors. Allis-Chalmers abandoned bushing-type truck wheels because, in its opinion, they could not be positively sealed.

Your Allis-Chalmers dealer will be happy to help you estimate the savings in time and material that are yours with Allis-Chalmers permanent lubrication. See him today. Allis-Chalmers, Construction Machinery Division, Milwaukee 1, Wisconsin.

move ahead with ALLIS-CHALMERS

...power for a growing world

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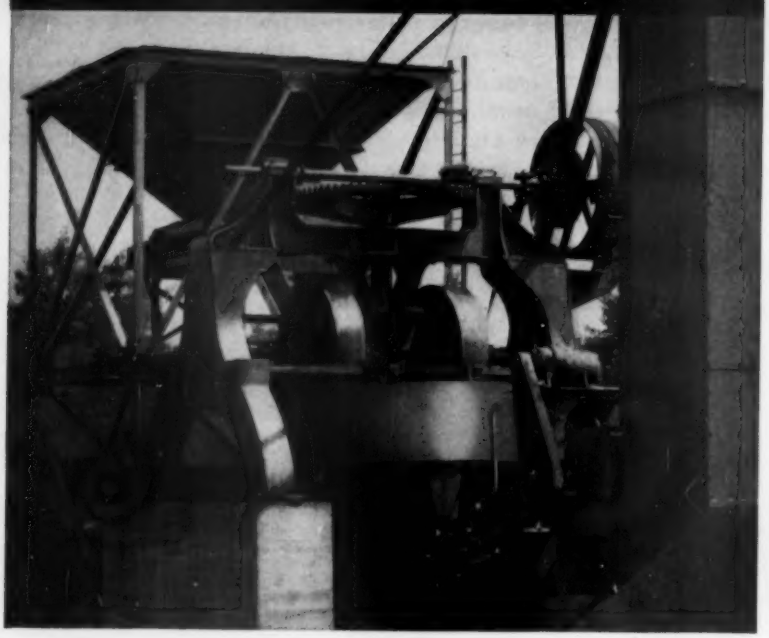
HUBER-WARCO grinders



30 yards of aggregate per hour

If accurate grinding, in volume, poses a problem in your plant . . . investigate the features of the Huber-Warco No. 9 GRINDER. This unit is ideal for the reduction of cinders, pumice, haydite, slag, and a wide range of quarry and mine products. Material can be handled wet or dry, with no screen plates required. Suspended mullers are adjustable to your volume and size requirements. All gears are of long-wearing cast materials. Unit requires only 25 horsepower. Rugged construction will give years of trouble-free operation. A Huber-Warco No. 9 GRINDER requires only a minimum of maintenance . . . conserves power . . . and will help you produce low-cost, top-quality cinder block. Write for complete details.

A product of HUBER-WARCO COMPANY, Marion, Ohio, U. S. A.

HUBER-WARCO COMPANY, Marion, Ohio, U.S.A.

☐ Please send me specifications on the Huber-Warco No. 9 Grinder

Name _____

Title _____

Company _____

Address _____

City _____ Zone ___ State _____

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HUBER WARCO

INDUSTRY NEWS

(Continued from page 66)

More cement expansions: Medusa, Ideal lead way

IN THE FOREGROUND of recent news of cement company expansions are a plant announced by Ideal Cement Co., Denver, Colo., and an ambitious 10-year program by Medusa Portland Cement Co., Cleveland, Ohio.

Medusa's $70-million program of expansion and modernization follows a 4-year program which has just been completed. The latter resulted in an increase in capacity of 4 million bbl. The new program will boost its capacity by another 4 to 6 million bbl. per year, said Ellery Sedgwick, Jr., president. New plants may figure in the expansion-modernization plans, he revealed.

The Ideal plant, a 1.5-million-bbl. facility, will be constructed at Clarkston, Wash. This $14-million plant will be located across the Snake River from Lewiston, Idaho and 100 miles south of Spokane, Wash. Construction is scheduled to start in 1960. When dams are completed to make the Snake River navigable, the plant will serve Ideal's terminal at Vancouver on the Columbia River, into which the Snake River flows.

Ideal's expansion projects also include installation of a second kiln at its new plant in Tijeras, N. M., and storage and packing facilities at Superior, Neb. Company directors OK'd $23 million for all the projects, which will add 2.75 million bbl. to Ideal's annual cement capacity.

Huron Portland Cement Co., Detroit, Mich., subsidiary of National Gypsum Co., has unveiled plans for a handsome new office building at its Alpena plant. The two-story structure will house the engineering, laboratory and personnel departments, with the entire first floor given over to the laboratory and library.

Campbells acquire Teeter Stone, Inc.

HARRY T. CAMPBELL SONS' CORP., Towson, Md., following purchase of John S. Teeter and Sons, Inc., Gettysburg, Pa., revealed that the subsidiary will be known as Teeter Stone, Inc. John D. Teeter will be president of the new subsidiary, directing its operations. It crushes trap rock at Gettysburg and has a limestone quarry in the Westminster-New Windsor area of Carroll County, Md.

(Continued on page 72)

NEW TALBERT'S "SKELETON – FRAME"

greater payload capacity for frame dump trailers

Talbert's "Skeleton-Frame" construction provides the stability of frame-type Dump Trailers . . . PLUS . . . the increase of thousands of pounds to your payload! Only Talbert combines the features of frame construction with "frameless" light weight.

CHECK AND SEE . . . you'll agree Talbert gives more!

STABILITY AND SAFETY—All axles are securely on the ground during lift.

PROVEN WEIGHT DISTRIBUTION—Usually not found in frameless trailer designs.

EASIER HANDLING—More reliable in tough unloading areas.

HIGHER STOCK PILING — Reduces rehandling costs and material storage areas.

Don't chance it! Get that extra margin of safety! . . . with increased payload! Talbert's "Skeleton-Frame" Dump Trailer is available in 20 and 26 foot lengths. Get Talbert Trailers for longer service with less maintenance. Your Talbert Distributor will gladly tell you all about it . . . see him today . . . or write for complete information!

Talbert Trailers, Inc.

7975 WEST 47th STREET
LYONS, ILLINOIS

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In Cement and Aggregates the Word for Air Separation is "Sturtevant"

in cement . . .

Sturtevant Air Separators make possible highly efficient closed-circuit systems. Large circulating loads increase output, eliminate overgrinding. Ball and lining life lengthens, power costs are lowered. Top quality cement results from precise control of finenesses. Standard 16 ft. Sturtevants deliver raw fines up to 70 tph, finished fines up to 260 bph.

in aggregates . . .

Sturtevant Air Separators classify sand without water, clean sand by de-dusting it. Pre-classification by air can also increase screening production by removing screen-blinding fines. In blending operations, Sturtevants select desired fines from grinder throughput. This graded product is then used to overcome fineness modulus deficiencies.

Send for Air Separator Bulletin No. 087.

STURTEVANT
MILL COMPANY
102 Clayton St., Boston, Mass.
Crushers • Grinders • Micron-Grinders • Separators
Blenders • Granulators • Conveyors • Elevators
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(Continued from page 70)

New incorporation

DEALING IN SAND, gravel and concrete products, Concrete Supply Co., Inc., recently was formed in Louisville, Ky. The firm was capitalized at $1 million by R. W. Greene, Jr., J. A. Greene and N. J. Greene.

Seal valve developed, manufacturing outlets sought

A NEW SEAL VALVE has been developed by Great Lakes Carbon Corp. for use in its plants for processing Dicalite diatomaceous earth. Because it has potential applications in many other processing industries, the company is seeking manufacturers whom it will license to produce the valve. Invented by Dicalite engineers Milo A. Harrison and Jerry C. Kovarik, the adjustable rotary seal valve controls the transfer of finely divided solids into or out of a pneumatic system.

The valve maintains a substantially gas-tight seal without the use of packing material or gaskets inside the valve housing. The clearance between the valve's rotor and sealing shoe can be adjusted to close tolerances while operating under conditions of high temperature and pressure—a feature which is credited for increasing the operating life of the valve by permitting adjustment to compensate for abrasive wear.

Manufacturing inquiries should be directed to the Dicalite Department, Great Lakes Carbon Corp., 612 S. Flower St., Los Angeles, Calif. END

CALENDAR

OF COMING EVENTS

1960

January 18-21, 1960
American Road Builders Association, Annual Convention, Netherland Hilton Hotel, Cincinnati, Ohio

January 19-21, 1960
National Limestone Institute, 15th annual meeting, Statler-Hilton Hotel, Washington, D.C.

January 24-28, 1960
Associated Equipment Distributors, Annual Meeting, Conrad Hilton Hotel, Chicago

January 28-29, 1960
Expanded Clay & Shale Association, Annual Meeting, Hotel Roanoke, Va.

February 1-5, 1960
American Society for Testing Materials, Committee Week, Hotel Sherman, Chicago

February 15-19, 1960
National Sand & Gravel Association, Convention & Exposition, Conrad Hilton Hotel & Coliseum, Chicago

February 22-24, 1960
National Crushed Stone Association, Annual Convention & Exposition, Conrad Hilton Hotel, Chicago

June 26—July 1, 1960
ASTM annual meeting and apparatus exhibit, Chalfonte-Haddon Hall, Atlantic City, New Jersey

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REO

Unique to Reo are the close tolerances held in the building of Gold Comet Engines—both V-8's and 6's. Engine sleeves, pistons, connecting rods and piston pins are atmospherically conditioned and fitted in an even 70° temperature. They are then assembled in an airconditioned, dustproof chamber where a 70° temperature is maintained the year 'round. Piston pins to piston, for example, are selected to within ½ of one-tenth of one-thousandth of an inch. Then actually *palm pushed* into place while all parts are at the exact same temperature.

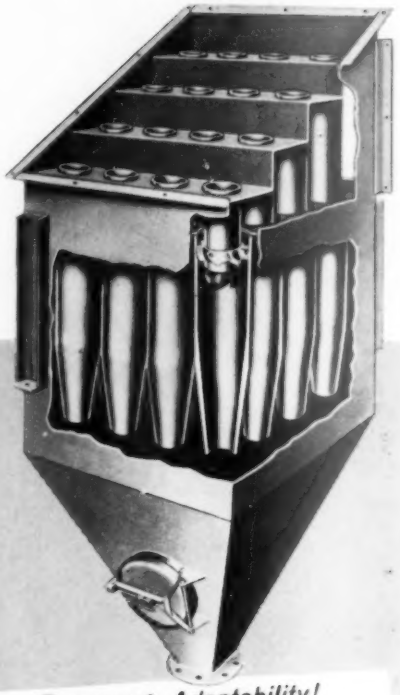
No truck engine in America is built with more rigid controls over quality.
REO DIVISION, The White Motor Company, Lansing, Michigan.

G O L D S T A N D A R D O F V A L U E S

For Modern Dust Control...

Compare

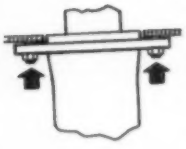
The EXTRA Advantages Built Into MULTICLONE COLLECTORS!



For cyclonic collection of dust or fly ash from all types of gases—hot or cold—no other equipment matches the *multiple* advantages you get in MULTICLONE Collectors. No wonder this small-tube equipment is so widely imitated—but only the genuine Multiclone combines so many important savings as these...

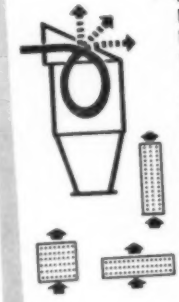
Compare Efficiencies!

Multiclone Collectors pioneered the modern small-tube concept of cyclonic collection. The Multiclone small-diameter tubes combine highest collection efficiency with minimum risk of plugging—and separate not only large, medium and small particles, but also an unusually high percentage of the extremely small particles (10 microns and less)!



Compare Maintenance!

Multiclone cast iron tubes and vanes seldom require servicing or replacement. But when unusually abrasive service makes occasional servicing necessary, the tubes (one or more, as desired) can be quickly replaced by simply unbolting the old tube and installing a new one. The cast iron vanes are supported in a tapered seat—are equally easy to service!



Compare Adaptability!

Multiclone Collectors can frequently be placed in otherwise waste-space locations too small—or not properly shaped—for other types of collectors. The shape of the Multiclone can be varied—short and wide, long and narrow, or square—to fit varying space restrictions. Moreover, the unit can be installed with side-inlet, side-outlet—or side-inlet, top-outlet—to fit plant layouts...and only a single inlet and outlet duct is required to service an entire bank of tubes. These multiple advantages add up to important savings in installation, in insulating costs, in space conservation!

Compare Compactness!

In addition to greater space adaptability, Multiclone Collectors also are unusually compact in themselves. For comparable capacity and performance, they require less floor space and less cubic space than do any other cyclonic units. Translate these space savings—plus Multiclone's adaptability to odd-shaped areas—into today's high costs for plant construction and you readily see how important Multiclone compactness really is!

The Above Are Only A Few of the many important advantages you get when you install Multiclone Collectors. Still more are outlined in Multiclone literature that will gladly be sent on request. Write or phone our nearest office for this helpful information!

REMEMBER ...

Western Precipitation is the ONE organization supplying ALL 6 major types of gas cleaning equipment —Precipitator, Cyclonic, Combination, Jet-Cleaned Filter, Hi-Temp Filter and Scrubber. You get a completely unbiased recommendation from Western Precipitation!

Only WP has all 6

1. COTTRELL Electrical Precipitators
2. MULTICLONE Mechanical Collectors
3. CMP Combination Units
4. DUALAIRE Jet-Cleaned Filters
5. THERM-O-FLEX Hi-Temp Filters
6. TURBULAIRE-DOYLE Scrubbers

Also: HOLO-FLITE Processors
HI-TURBIANT Heaters

WESTERN PRECIPITATION CORPORATION

M-131

Engineers and Constructors of Equipment for Collection of Suspended Material from Gases . . . and Equipment for the Process Industries

LOS ANGELES 54 • NEW YORK 17 • CHICAGO 2 • PITTSBURGH 22 • ATLANTA 5 • SAN FRANCISCO 4

Representatives in all principal cities

Precipitation Company of Canada Ltd., 8285 Mountain Sights Avenue, Montreal 9

Enter 1076 on Reader Card

HINTS & HELPS

PROFIT-MAKING IDEAS DEVELOPED BY OPERATING MEN

Which is the safer job?

IT DOESN'T TAKE a crystal ball to see that the rugged wooden platform in the "after" picture (top) is the safer job. A western cement maker's ball mill maintenance crew straddled the mills for years before someone thought of this platform.

With the wooden platform which can be easily handled by the overhead crane, the workers don't have to be skilled mountain climbers. Now there is plenty of space to lay out their tools, and even a place for their supervisor to stand.

Mobile laboratory

AS AGGREGATES specifications become tighter and more rigidly enforced, more attention must be paid to in-plant testing conditions. A number of producers already send samples to centrally-located testing equipment or to commercial laboratories.

An English rock products producer has found that a laboratory in a small bus is most economical. When a new quarry is opened, the fully-equipped bus is driven to the site. It stays there long enough to check out the quality of the first production and to sample sizes and volumes from each piece of equipment.

For normal operation, the bus load of equipment moves from one quarry to the next on a regular schedule to analyze the collection of samples accumulated during its absence. Admittedly, it cannot check samples immediately after they are collected, but it has proven to be a reliable, efficient check on production.

Want to sleep on the job?

IT'S NOT OFTEN DONE, we know. Everyone, even the boss, likes to go home at night when the day's work is done. But when this is not possible, then a western contractor's idea could pay off.

A pickup truck can be fitted with a body which can sleep three; it is furnished with ice-box, water system and galley. A manufacturer now offers the body to anyone with a pickup truck and a yen to live closer to the job.

Truck loader

WITH A FLIP OF A SWITCH a truck driver can divert the flow from a conveyor to fill his truck. A gate in a bifurcated chute at a conveyor transfer point makes it possible for him to do this. A western rock products producer arranged all of his reclaim tunnel conveyors with chutes in this way to provide self-service for trucks. And to make it even easier, there's an overhead light at each loading point for night loading.

Add wings—try flying

IF YOUR AGGREGATES DEPOSIT is loosely compacted and you're bulldozing it to a reclaim hopper, you may find that either the blade is too small or the tractor is too big for the job. A Minnesota gravel producer realized that his normal straight blade was only gathering a fraction of the loose gravel with each pass. The tractor was scarcely exerting itself to the limit.

The solution: Wing plates with cutting edges. These 18 in. wide plates were bolted to each end of the bulldozer blade at about a 45 deg. angle. As a result the blade now can pick up about 25 percent more material and make the big tractor work a little harder.

(Continued on page 78)

PAYLOADER® TEAM

The H-90 with its 9,000 lb. carry-capacity, 40° bucket tip-back at ground level, and 162 h.p. turbo-charged diesel gets and moves 3 yd. bucket loads from pile to truck in fast efficient cycles with minimum spillage loss.

The 110 h.p. Model H-70 with 7,000 lb. carry-capacity and 2 yd. bucket teams up with the bigger H-90 to load big tandems in a hurry or to load smaller trucks with material from other stockpiles.

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LOADS 10,000 TONS PER DAY

Holly Mfg. & Mining Co. produces 16 classifications of material — ranging from fine asphalt sands to 2½" stone — from its pits in the Holly, Michigan area. It is presently supplying aggregate for Denton Construction Co.'s paving contract on State highway M-78 relocation.

To make sure that its gravel is well within the State Highway Department specifications Holly uses heavy-media separation as well as conventional washing methods. And to be sure that it has flexibility, capacity and reliability on its truck-loading operation it has two "PAYLOADER" tractor-shovels. These two machines — a Model H-90 with 3-yd. bucket and a Model H-70 with 2-yd. bucket — load as many as 250 trucks (40-ton tandems) on a busy day, and regularly average about 100 trucks a day — plus stock piling and clean-up work.

W. D. Hancock, Manager of Holly Mfg. & Mining Co. says, "We are well satisfied with these two machines" and the "PAYLOADER" operators are especially impressed by their "ample power, ease of operation, maneuverability and loading speed."

Pit and plant operators and contractors have been profiting with 4-wheel-drive "PAYLOADER" work-ability for more than eleven years. Most of those pioneer machines are still at work. And today's 4-wheel-drive "PAYLOADER" units are also far ahead of the field — in performance, ease of operation and usefulness — and are available in a complete range of sizes from 5,000 to 12,000-pound carry capacity.

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Take care of spares

TIRES, V-BELTS and other industrial rubber products are remarkably tough when they are in place, doing the job they were designed to do. But when they are left to their own devices in warehouses and storage sheds, they are remarkably fragile and sensitive to their environment. Many operators who are familiar with the toughness of rubber products are often astonished at the way they can deteriorate when not cared for.

A western cement maker left nothing to chance when it came to care in storing his belts, tires and V-belts. All tires were carefully placed in pipe racks, clear of the floor where oil or chips might collect. V-belts were systematically stored on pipe hangers on the wall, with the hangers large enough to hold a number of belts of the same size. This system makes it easy for the storekeeper to see at a glance which sizes are needed.

Old belts are useful

THERE IS STILL plenty of opportunity for producers to use their ingenuity to put pieces of old conveyor belts to good use.

We've seen several examples of belts used to make bin seals or manhole covers. Strips of wide belt are cut to the needed length. Then light angles are riveted to make flanges which fit over the edges of the opening. Naturally, the width of the belting available limits the size of the cover, but unless there is a need for vapor-tightness, the belts can be joined lengthwise.

A midwestern cement producer lashes long strips of used conveyor belt to the bottom of his tubular discharge chutes. In this way, the coal, rock gypsum or clinker that is handled forms a pile with a minimum of dust without backing up into the rigid sections of the chutes. When the material does get this high it forces the belt sections wide apart, signalling the operator to raise the chute.

Conveyor flexibility

A WESTERN SAND PRODUCER achieves extra flexibility with his storage system by having the final conveyor from his sand preparation equipment discharge to one of TWO stacker belts.

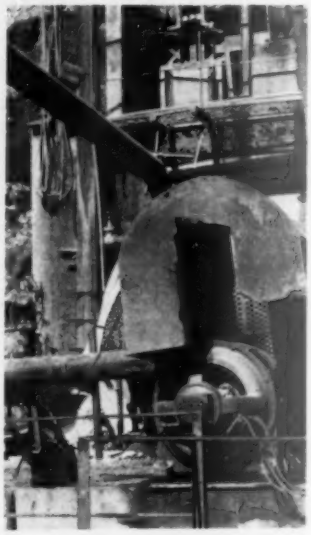
One of these stackers delivers sand to a storage area over a reclaim tunnel. Here the sand can pile-drain before it is reclaimed and shipped. The other stacker is spotted to discharge directly into open top gondolas. This arrangement saves a lot of time and expense for the purchaser who is willing to accept fresh, wet sand. At the same time, the normal operation of the storage system is delayed only while a car is being loaded. The reclaim system operates completely independently of the other conveyor.

Electric cable splices

A CANADIAN ASBESTOS producer now makes a sound, permanent splice on the 2,300 v. trailing cables to the shovels in the quarry. This is possible with the use of a self-curing resin, injected into the splice with a pressure gun.

This practice eliminates the inconvenience and hazards of making a temporary splice in a high voltage cable before taking it out of service. A permanent splice formerly had to be made in the electrical shop and sealed by vulcanizing.

Motor covers



PRODUCERS IN ALL PARTS of the country have found that motor housings or covers are a big help, especially when some of the older open motors are still in operation. But the very size and ungainliness of an adequate sheet metal housing often discourages its use.

A southern crushed stone producer solved this dilemma by using a small handwinch to raise and lower a large motor covering. During the summer and when the weather is clear and warm, the winch holds the housing just clear of the motor. On weekends, during dust storms or tropical downpours the sheet metal housing is lowered into place to protect the motor.

Stone blender

A SOUTHERN crushed stone producer rigged up an ingenious system for feeding sized stone to his shipping bins. A vibrating feeder under each bin can feed either size to the belt conveyor leading to the surge bin. The feeders can be remote controlled from the shipping bin.

When a blend of sizes is required, the operator can set an operating speed for both feeders. In this way the ratio of each size can be controlled, giving him greater production and shipping flexibility. END

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Only CEDARAPIDS HORIZONTAL VIBRATING SCREENS can give your stationary plants these Profit-Benefits

- **Higher Plant Capacity** The *horizontal* position of the screen gives 12½% more effective screening area than inclined screens of the same length, and 30% greater capacity. Openings at right angles to the fall of material permit more material to go through the screen cloth. Crushers are not bogged down by screen carry-over. All plant components can produce more tons per hour.

- **More Accurate Gradation** The 100% effective full area of each horizontal cloth opening permits the correct size of material to pass through. On an inclined screen, the position of the screen wires actually narrows the effective opening in relation to the fall of material.

- **Lower Plant Maintenance** Higher screening capacities and closer grading reduce the circulating load, thus cutting down wear on crusher jaws, roll shells, conveyors, etc. On low-maintenance Cedarapids screens, a heavy-duty feed box absorbs shock of falling material to prevent screen damage and spreads material over the full screen width. Stress-relieved screen box assures long, trouble-free service life.

A Cedarapids Screen for Every Requirement

Sizes from 3' x 8' to 5' x 16'

Single, double or triple deck models with many different deck arrangements

Ag-lime screens with cloth openings as small as ⅛ inch

Rip rap screens

Inclined screens for jobs where low initial cost is more important than accurate gradation

Spray bar attachments

Vibrating grizzlies

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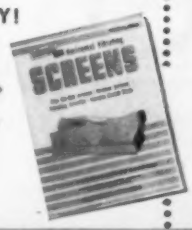
Send for this Bulletin TODAY!

It describes the complete line of Cedarapids Screens and explains the many exclusive features that help you increase your plant production . . . and profits.



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How AMSCO helps you MOVE

Read why AMSCO Simplex Teeth and hardfacing are first choice of these users

SIMPLEX TEETH STAY SHARP AFTER 20,000 TONS OF DIGGING

AT VICTORVILLE LIME ROCK CO.

At Victorville Lime Rock Co., Victorville, California, four Amsco Simplex 2-Part Reversible Teeth were installed on a shovel used in a stripping operation. Teeth previously used "lost their points" after digging about 18,000 tons of rock... and had to be replaced or rebuilt. The Simplex Teeth have already dug over 20,000 tons. Paul Keating, Quarry Superintendent, expects to get *at least 25,000 tons* before changing teeth.

Wright Smith, operator of the strip shovel, is equally enthusiastic about Simplex Teeth. He says they can lose more than 2" due to wear, and still hold their points. This means lower cost operation and fewer shutdowns for maintenance. Old-style teeth had to be sent out for welding when worn down a couple of inches.

Victorville Lime Rock Co. produces a pure white lime rock used as an extender or filler in paints, plastics, floor tiles, rubber, ceramics, etc. They operate a 100 ft. deep quarry, and plan to switch to Simplex Teeth on their other production shovels, too, in order to save on maintenance costs.

AMSCO HARDFACING ELECTRODES PROVE BEST FOR BUILD-UP JOBS

AT BAY CONTRACTORS WELDING SERVICE

"Amsco AW-79 wire doesn't twist and gives an excellent, uniform bead" —says Peter Agresta, partner in Bay Contractors Welding Service, El Cerrito, California. He also adds that AW-79 gives service life equal to, or better than, any wire they've ever used.

As a result, Bay Contractors uses Amsco AW-79 (a highly quality-controlled tubular rod) for just about every type of build-up job... except where surfaces require machining.

For example, they use it for build-up of diesel switcher wheels... crawler tractor rollers and idlers... shovel rollers and front take-up rollers... house carrier rollers... sheaves... cutting edges on all alloyed blades.

For further information:

SIMPLEX TEETH – see your power shovel equipment dealer, or write Amsco for technical bulletin.

HARDFACING ALLOYS – see your Amsco welding distributor, or write direct for Condensed Catalog and Price List.

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Welding products distributed by Canadian Liquid Air Co., Ltd.

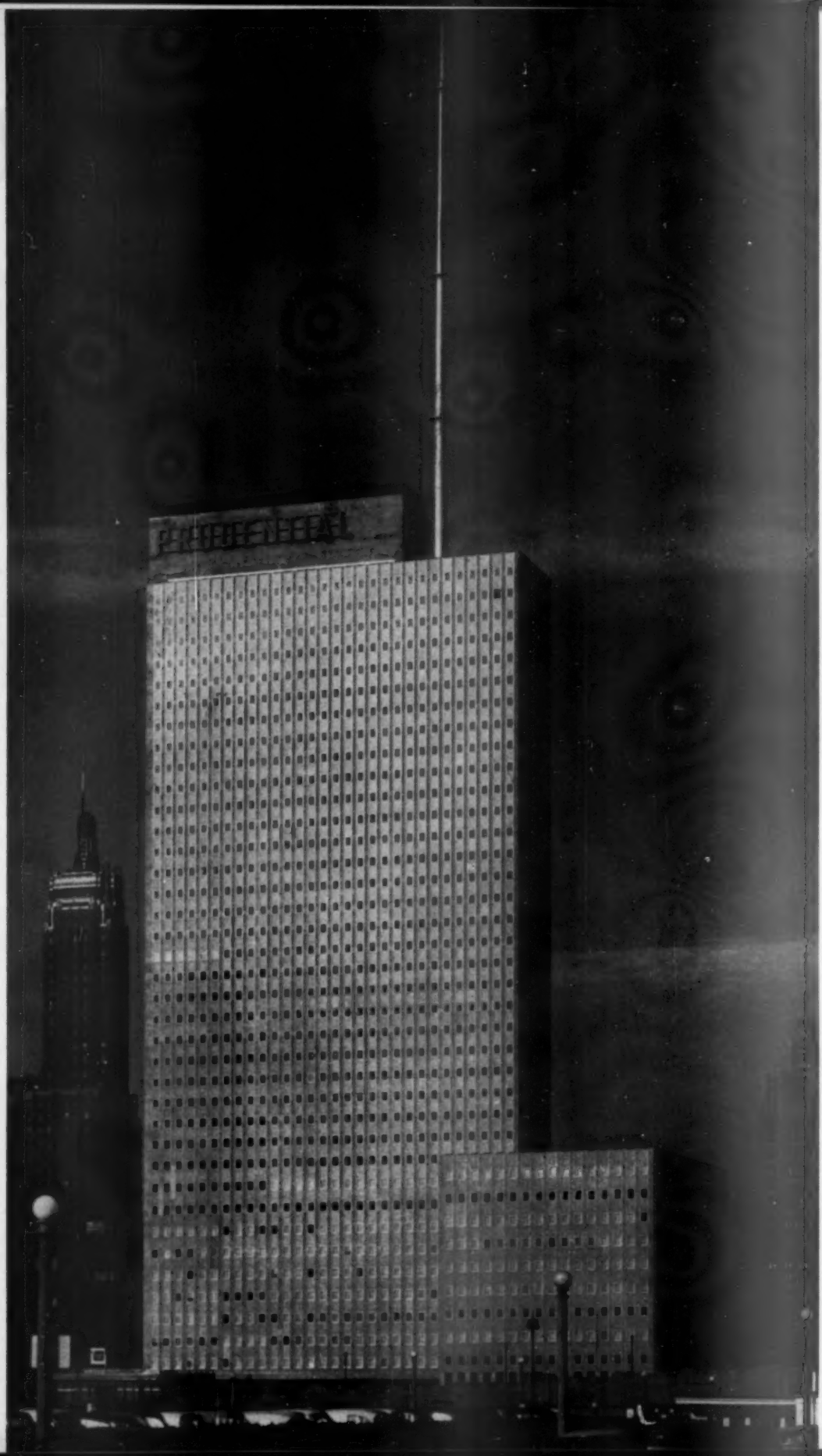
MORE TONS PER DOLLAR

← **Northwest Model 6** shovel, equipped with Amsco dipper and Simplex Teeth, used for stripping operations at Victorville Lime Rock. →

Wright Smith, shovel operator (left) and **Paul Keating**, Quarry Superintendent (right) examine Simplex Teeth on Amsco dipper . . . after some 20,000 tons of digging.

→ **Peter Agresta**, of Bay Contractors Welding Service, uses automatic machine of own design to build-up tractor idler. ←

Build-up of crusher jaw plate is demonstrated by a Bay Contractors' welder . . . Manganese rounds are first tack-welded across surface of plate with Amsco Nicro-Mang. Amsco Manganese Rod is used in the Amsco semiautomatic machine to build-up plate to original cross-section. The plate is then straightened by a special process.



ROCK PRODUCTS
November 1959

Part 1

This jet-propelled industry pauses now to survey its problems before taking off on more expansion

Lightweight aggregates come of age

by Kneeland A. Godfrey, Jr.

WHAT'S BEHIND ALL THE EXCITEMENT about lightweight aggregates? Just in the past few months, we've heard of new plants being planned or starting operations in Florida, Minnesota, Colorado, British Columbia and Quebec. The reason: Sales are booming. Production, now at about 7 million tons yearly, is roughly 5½ times production in 1950. And sales may double in the coming decade, producers tell us.

At least one cement maker (Ideal) and many natural aggregate producers are making the newly popular expanded aggregates. Since other rock products operators are asking questions about these weight-savers, a roundup piece on the markets for, and the future of, the industry was a natural.

To analyze what's behind this great rate of growth, and to get ideas on the outlook, we quizzed a dozen lightweight aggregate producers and association men. Here is a review of their statements, summarizing both the optimistic and the more conservative viewpoints on the future of this still-small industry. Most of them are optimistic because:

(1) Sales of structural lightweight concrete (including block) may double nationally in the next 10 years. This will mean a doubling of national lightweight aggregate sales, too (some of it due to new plants). Concrete has become the material to build with, many architects say, since they can be most creative using it, and (with new design techniques) still can keep costs competitive with steel and other materials. A growing share of this concrete work will be made with lightweight aggregates.

(2) One-third lower weight without reduction in strength and one-third better insulating properties are the big reasons for growing popularity of the structural lightweights. For instance, designers of the dramatic Milwaukee War Memorial center saved 15 percent in reinforcing steel and 12 percent in structural concrete by using lightweight aggregates. This cut the cost of the structure substantially.

(3) There are promising areas for new plants in population centers not served economically by existing plants. Where there is a large enough market with no nearby producers of a quality lightweight (or where natural aggregates are short), chances of prospering are good.

To give a balanced picture, here are four points commonly mentioned as likely to limit growth of the industry:

(1) Lightweight aggregates cost much more to produce than the natural aggregates which often need only washing and classifying. For this reason, use of the lightweights always may be limited to structures in which their light weight and insulating properties will offset the added cost. Probably no more than 5 percent of the structural concrete market for aggregates ever will be captured by the lightweights, several producers tell us. Many things traditionally made of concrete—

Please turn page

TOWERING Prudential Building dominates Chicago's lake-fronting Michigan Ave., makes use of 30,000 cu. yd. of expanded slag aggregate to save 17,000 tons in dead weight

LIGHTWEIGHT AGGREGATES COME OF AGE, *continued from p. 83*

foundations, roads and dams, for instance—may never incorporate expanded aggregates. In these applications, low weight and top insulating properties are of no advantage.

(2) Many population centers already have all the expanded aggregates they can use. In these areas competition is keen, keeping profit margins down. Roughly 60 expanded shale, clay and slate plants are already in operation, well scattered over the nation. Expanded blast-furnace slag is made in about 20 plants in areas having primary steel plants.

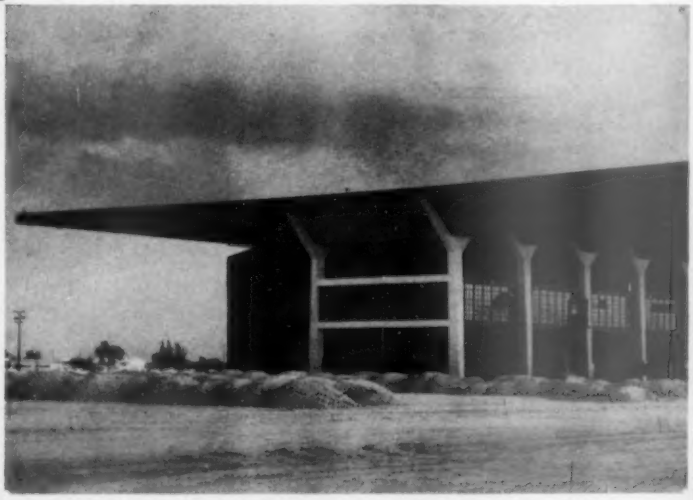
(3) New expanded shale or clay plants cost a million dollars or more to build and make profitable. This high figure discourages many. On top of this, there is a real shortage of expert plant managers and top sales personnel who can convince designers to use the newly important material. Making and selling the lightweights is much more complex than is the case with the heavier natural aggregates.

The markets which will grow fastest are precast and cast-in-place lightweight structural concrete, producers tell us. Though they now use only 15 to 20 percent of lightweight aggregate production nationally, this figure should jump to 50 or 60 percent of sales by 1969, they say. This big gain will cause sales to double to 14 million tons a year.

Concrete is now the material to design with, according to Albert Parme of Portland Cement Association. The groundwork for this breakthrough in the use of structural concrete has been laid largely in the last 15 years, he notes. Here are some of the new design techniques which are boosting structural concrete's stock: (1) Barrel, hyperbolic paraboloid, folded plate and other types of thin-shell designs make the roof just as exciting as the walls in a structure. (2) Exposed aggregates and form liners permit wall patterns of endless variety. Now the surface itself of structural concrete is an important part of the design. (3) Color in concrete frees it from the former limited choice between white or drab gray.

New concrete products manufacturing techniques are just as important as design innovations to the growth of lightweight concrete as a structural material. Prestressing, of course, is

DRAMATIC Milwaukee War Memorial building has offices cantilevered out in three wings. Expanded shale lightweight aggregate was used to cut volume of concrete required by 12 percent, and reinforcing steel required by 15 percent



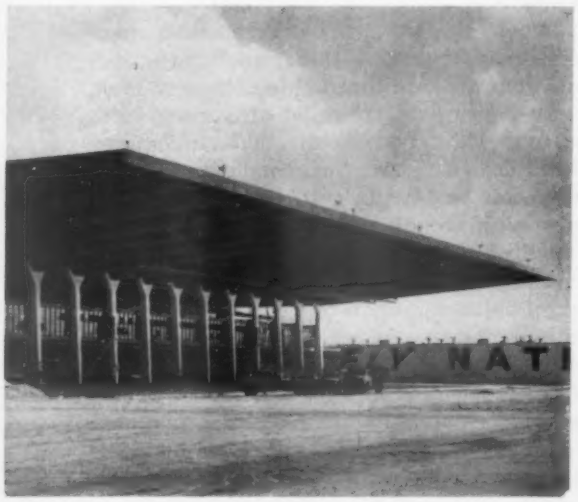
WINGS cantilever out 111 ft. in this National Airlines hangar at Miami's International Airport. Expanded shale concrete saves weight in the folded-plate roof

the best known new way of using concrete more efficiently. Factory precasting of concrete structural members is another innovation that is cutting costs and boosting quality by putting the operation on an assembly line. A final innovation, ultimate-strength design, enables engineers to plan concrete buildings more effectively. All these techniques cut costs of beams, columns and floors, making concrete more widely competitive with steel and other structural materials.

Here are three structures that used lightweight structural concrete, and saved money by doing so: (1) The new 22-story Commonwealth Building in Louisville originally was built only four stories high, but sturdily enough to support 15 more floors, should the occasion arise. Well, when the occasion arose recently, a structural analysis showed that 18 floors could be added if lightweight floor fill and lightweight block (as back-up for exterior walls) were used instead of sand-gravel concrete. Rental revenue from the three extra floors makes the switch a profitable one.

(2) The designers of the new (rebuilt and now safe) Tacoma Narrows suspension bridge saved $320,000 in structural steel and cable costs by using lightweight concrete instead of natural-aggregate concrete for the bridge deck.

(3) The impressive total of 30,000 cu. yd. of expanded slag were used in building Chicago's towering Prudential Building. By using this material, about 17,000 tons of deadweight were saved, the National Slag Association reports. The floors, columns and beams in the 42-story building's upper floors all are made of expanded slag concrete.



Lightweight aggregates offer other top physical properties besides the obvious weight advantage. They permit savings in fire insurance rates and provide superior thermal insulating qualities. A wall of lightweight concrete may be one-third thinner than a natural-aggregate concrete wall and still have the same heat insulating ability. These figures on fire rating requirements show how thick varying types of block must be to pass the 2 and 4-hour tests:

Block wall thickness to meet fire ratings*

Rating	Exp. slag concrete	Exp. shale concrete	Calcareous concrete	Limestone concrete
2 hour	3.2 in.	3.8 in.	4.2 in.	4.0 in.
4 hour	4.7 in.	5.7 in.	6.2 in.	5.9 in.

*from National Building Code (1955) and recommended by National Board of Fire Underwriters.

The following figures indicate savings possible in heating and insulating costs (though higher cost of lightweight block often offsets this). The coefficient of heat transmission "U" for a wall made of 8-in. concrete block, with no plaster, lath or insulation is:

Type of block	Coefficient of heat transmission "U"*
Sand and gravel	0.53
Cinder	0.37
Clay, shale or slag	0.33

*from "Concrete Masonry Handbook" of Portland Cement Association, page 10.

Popularity of lightweight block accounts for the present size of the lightweight aggregates industry. Block sales have doubled since 1947 to 2.2 billion units a year. Today more than half of all block sold are lightweight units. Roughly 80 to 85 percent of structural-grade lightweight aggregates sold go into block, producers tell us.

The major reason for this present demand for lightweight block is that architects are sold on it, especially for commercial buildings and schools. For one thing, block often makes the lowest-cost wall. Many masons dislike natural-aggregate block (too heavy). But they don't mind working with 27-lb. lightweight units, as they do with the 40-lb. natural-aggregate units. Therefore, lightweight block are the order of the day. As Allan Taylor of Kentucky Light Aggregates, Louisville, notes, the lightweight block "is already partly sold, for we have the masons on our side."

Other reasons for the fast growth of the lightweight aggregates industry in the past 15 years are these: First, a new traveling-grate process

Please turn page

LIGHTWEIGHT AGGREGATES COME OF AGE, *continued from p. 85*

FORM LINERS were used in Portland Cement Association's new structural laboratory to add interest to the big (20 x 30 ft.) tilt-up wall panels. Lightweight aggregates made erection of the 8-in. thick panels easier and improves their insulating ability

came into use after World War II. It supplements the rotary kiln as a method of bloating clay and shale, and offers an important advantage. While producers using kilns must locate near a deposit of rather scarce clay or shale that will "bloat," the grate process can use a wider variety of raw materials.

Second, the original protective patents held on rotary-kiln production of expanded aggregates ran out soon after World War II. When this happened, new producers jumped into the field with their own plants using this proven technique.

The two principal structural lightweights have grown in importance at slightly different rates, but both are important today. Expanded blast-furnace slag, specially processed from molten slag as it comes from the blast furnace, is widely used in areas having steel plants. About 20 plants in this country produce 3 million tons yearly. This is an impressive rise from the 800,000 tons produced as recently as 1946. Slag has the advantage of being lower in price than expanded clays and shales.

The expanded clay and shale aggregates have grown even more quickly in use. Sales jumped from perhaps half a million tons in 1946 to more than 4 million tons yearly at present. Advantages of this type of expanded aggregate are that raw material is found in every state, and that concrete strength (equal cement content) often equals or approaches that of concrete made with natural aggregates.

Factors limiting the use of lightweight concrete are not hard to find. For one thing, take cost. While prices for natural-aggregate concrete average around $13.50 per cu. yd., the per-yard price of lightweight concrete is typically $5 to $9 more.

Second, compressive strength is often less (with equal cement content) for lightweight concrete than for its heavier counterpart. While it varies from aggregate to aggregate, these averages (derived from Portland Cement Association Research Bulletin D17) prove the point. Usually more cement is needed to make up the difference.

	Av. bags of cement per cu. yd.	
Type of concrete	3,000 psi. comp. str.	5,000 psi. comp. str.
Elgin sand and gravel	3.8	5
Expanded clay or shale	5	7½
Expanded slag	6½	8½

Third, drying shrinkage is larger in many lightweight concretes than in natural-aggregate concrete. The same PCA report estimates that ultimate drying shrinkage of lightweight structural-grade concrete ranges from 106 to 138 percent of that for sand-gravel concrete.

Fourth, unpredictable water absorption is sometimes a serious problem, reports PCA's Howard McGinnis. In pre-production lab tests, lightweight concrete may have adequate workability with the designed water and air content. But when the production-run ready mix reaches the job, the contractor sometimes finds it stiffer than he likes and adds water. Since this weakens the concrete, it causes consternation back at the architect's office.

Alluding to the same problem, the sales manager of a slag firm warns that "much more positive and accurate field control" is necessary when using the lightweights than when working with natural-aggregate concrete. He adds that many structural designers are "insisting that an engineer-inspector be placed on the job" full-time to minimize such troubles. (A new American Concrete Institute standard, ACI 613A-59, gives recommended practice for selecting proportions for structural lightweight concrete. It should be a big help in mix design and job control, advises J. J. Shideler of Portland Cement Association.)

A fifth problem is important to those selling to the big block market for expanded aggregates. This is segregation of a mixed-size product during shipment to the block plant. Large aggregate

and fines definitely should not be combined until ready for use at the block plant, says R. F. Leftwich of Sayre and Fisher, Sayreville, N. J. But because shipping two sizes separately means they would need two bins, block producers won't go along. Since they won't spend the money for the second bin, segregation occurs in the mixed aggregate, and block made with it has an uneven texture. To avoid such an outcome, architects specify fine aggregate only. But in this size range, expanded clay and shale can't compete with lower-cost material. As a result, cinders are substituted.

Happily, these problems are being solved. Associations and individual producers are coming up with answers. For instance, most producers we talked with have prepared technical data booklets giving the physical characteristics of their product. From this, it isn't difficult to pick the mix needed to do a job, and to make cost comparisons with other materials.

"Five years ago we were perhaps 20 to 25 years behind conventional reinforced concrete in what we knew about our materials' performance in structural concrete," says Managing Director Frank Erskine of Expanded Shale, Clay and Slate Institute (rotary kiln producers). "Today we have just about caught up."

But more work remains to be done, urges E. W. Bauman, managing director of National Slag Association. Lack of intelligent design criteria is the major hurdle to more sales of lightweight aggregates, he says bluntly. He calls for "a joint effort of all lightweight aggregate interests" to develop more complete data on strength, weight and economy of lightweight concrete. Kenlite's Allan Taylor agrees that more specific information for designers is needed to make their job easier. They can design much more easily with structural steel, he admits—simply by pulling a few figures from a handbook. Naturally, many pick the path of least resistance.

Top problem the industry faces? Getting architects and engineers to try lightweight concrete, agree many producers with whom we talked. This requires more intensive effort in educating them on the savings often possible with lightweight concrete, stressing its light weight, plus its good thermal and sound insulation properties.

"It is a well-documented fact that once architects, engineers and contractors see how well lightweight concrete does a job, there is enthusiastic acceptance of the product," writes Executive Secretary T. R. Berger of Expanded Clay and Shale Association (traveling grate producers). "But to arrive at this point," he suggests, "the producer in every case must work closely with these men, assisting in mix designs and showing how lightweight concrete is put to the best possible use."

Actually, both the associations and individual producers are doing a good job of promoting their product and following through to the job site. For instance, such firms as Light Weight Aggregates Corp., Livonia, Mich., distribute promotional literature featuring handsome recent jobs in picture-and-text data sheets.

What kind of future has this busy, growing industry? It's going to be prosperous for the sharpest producers, but mighty slim for those who don't research their market carefully before beginning operations, or who don't make a consistently high-quality product. This lightweight aggregates industry is glamorous but, cautions one producer, "Don't get stars in your eyes." It is going to grow, but will never reach the size of the heavyweight aggregates industry, with its billion-dollar-plus annual sales. There are several reasons why.

The big reason, producers agree, is that most aggregates go into construction projects like highways, foundations, dams and one-story structures —projects where light weight is no advantage. With much higher prices for the lightweights, clearly they never will be used widely in such applications.

The potential market, therefore, is certainly no larger than 5 percent of the roughly 1.1 billion tons of heavy aggregates used yearly. To illustrate, Kentucky Light Aggregates, Louisville, is a well established, comparatively large operation with two kilns. But even if production should double in the next decade, it still would total only 5 percent of the present aggregate market in the area, an official there predicts.

Other growth-governing factors include: (1) Most of the industry's growth is likely to come in areas with no present plant, remarks W. W. Allen, Jr., manager of Hydraulic Press Brick Co., Cleveland. (2) The cost to build and establish sales of a new clay or shale operation runs to a million dollars or more, an amount sufficient to scare away all but the most confident. While the cost to set up an expanded slag operation may be less, the market is limited to areas with steel mills. (3) The profit margin is "relatively slim,"

Please turn to page 138

General Portland moves into Miami market

Materials handling innovations bring rock bottom operating costs

by Elwood Meschter

GENERAL PORTLAND CEMENT CO.'S ENTRY into the active market for cement in southeastern Florida is a new plant with an annual capacity of 2½ million bbl. Prime advantage to locate a cement plant on a 2,400-acre tract of Florida swampland is the massive, 40-ft.-deep deposit of oolitic limestone. Top of this formation is only 3 ft. below the surface of the soggy Everglades.

The apparently limitless expanse of limestone is engulfed in an equally limitless ocean of groundwater. As rock is removed to make foundations, drainage canals or pits, water flows in immediately to fill the hole to the brim. This situation added to the complexities of construction and brought unusual quarrying problems. But it was only natural that raw materials should be conveyed hydraulically from the quarry to the plant and that the wet process should be used to prepare the raw materials for the two 11¼ x 425-ft., oil-fired kilns.

This is the 10th cement plant in the General Portland organization and its second in Florida. The new plant, only a few miles directly west of Miami, will supply that market with all the usual types of cement needed by concrete products producers and concrete contractors except white cement. This will be shipped from General's Tampa plant nearly 300 miles away.

General's design engineers had two objectives when they laid out this new plant. One, it would provide an outstanding example of the flexibility, usefulness and economy of industrial buildings made almost entirely of concrete. Secondly, it would be a cement plant that would have exceptionally efficient materials handling equipment with low maintenance expense.

The new plant closely approaches these two goals. The flexibility of concrete is amply demonstrated by the use of virtually every technique of concrete construction in mill buildings, silos, storage tanks and office buildings. Prestressed beams were used in kiln and office buildings. Slipform construction was used for tanks, silos and for the enclosed kiln building itself. This is one of the largest buildings to be erected by slipform construction, and columns and panels on all four sides were fabricated in one continuous pour.

Not only was this building unusual in construction, but the reasons for having it were, too. It protects the two huge kilns from the upsetting effects of periodic torrential rains. The heavy, rugged construction of the building provides protection for the kilns, coolers and electrostatic precipitators from the uncertain hazards of an occasional hurricane.

Three features unusual in cement plants characterize the solution to several materials handling problems.

- A pipeline transports limestone from the quarry to the cement plant.
- Dust collection is made almost 100-percent efficient by bringing clinker cooler air to the electrostatic precipitator.
- Gypsum and clinker is taken to the ball mill through the air separator, eliminating a separate conveying system for these materials.

Efficient materials handling starts in the "quarry," a water-filled lagoon. The limestone is of ancient coral origin, probably hundreds of feet deep. But the top 40 ft. is the most economic depth to

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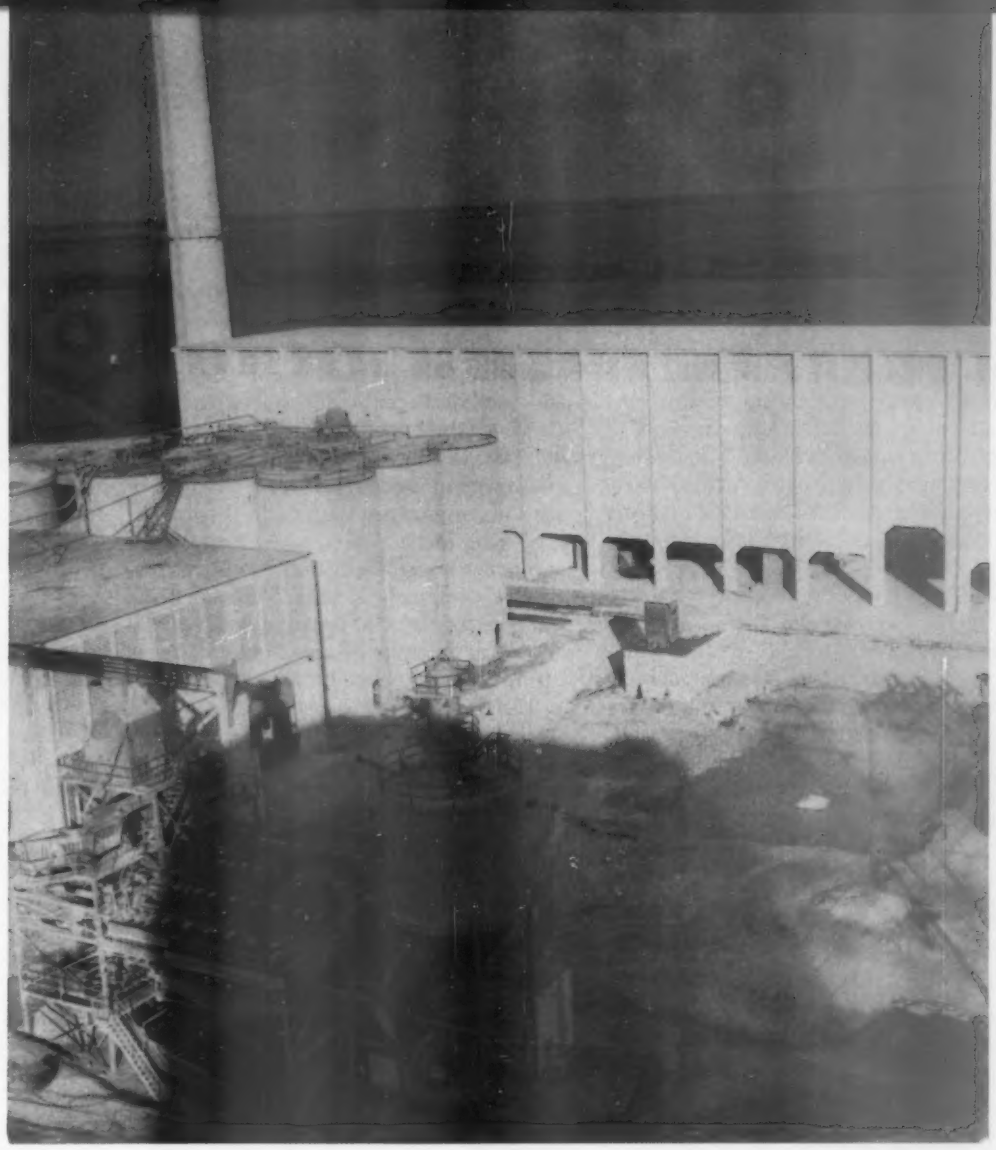


ABOVE: Nine storage tanks hold raw materials in various stages of processing. All buildings, tanks and silos in the new plant are made of concrete

RIGHT: The swampy Everglades stretch to the horizon. General's 2,400-acre tract has enough limestone for years of continuous operation

work and has the best limestone. The blasted limestone is prepared for pumping in a floating barge where it is crushed, mixed with water and pumped more than half a mile.

Limestone is made ready for blasting by putting down 6½-in. diam. holes with a "down-the-hole" hammer drill. The bit is withdrawn and 4-in. dynamite is slipped into place in the bottom of the hole with a steel tube-loading stem. As many as eight holes a day are loaded and detonated in groups of four.

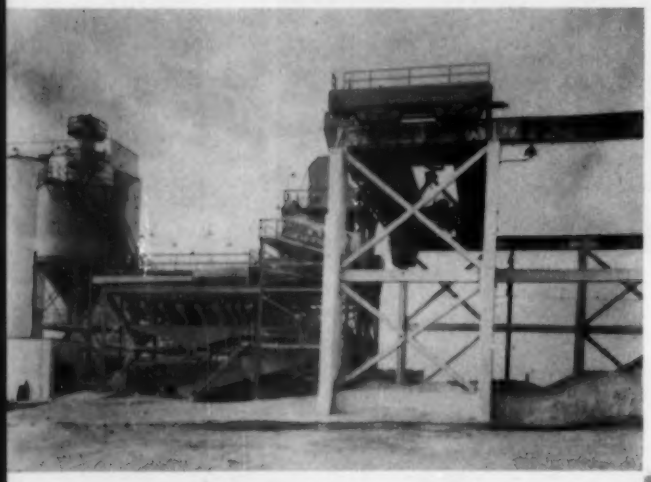
The dragline casts an 8-cu. yd. bucket about 90 ft. out into the lagoon with its 150-ft. boom. Each bucket load must be lifted about 40 ft. to the top of the hopper on the floating barge moored close to the dragline. A reciprocating feeder delivers the mass of wet rock to a 5 x 12-ft. vibrating scalping screen while the excess water and fines cascade through the grids to a sump. Oversize limestone drops to a 72-in. hammermill to be reduced to minus ¾ in. This product drops to the sump where it is mixed with extra water to make a pumping slurry with about 15-percent solids. A 16-in. centrifugal pump moves the crushed limestone to the cement plant storage area at about 500 tph. through a 16-in. pipeline. As the dragline and barge move further from the plant, additional sections of pipe are coupled to the line.

Slurry dewatering in the cement plant storage area is extremely simple. The pipeline discharges above a fixed, inclined bar grizzly which removes any stray oversize. Flumes under the grid distribute the slurry of fine limestone between a pair of 5 x 12-ft. vibrating screens. Plus ½-in. oversize from these screens drops through chutes to the storage area. An overhead crane takes this wet material and distributes it to storage piles ready to supply the raw grinding mill.

A water scalping tank under each vibrating screen catches the through-screen fines. Limestone sand is retained and dropped to a screw classifier for further washing and dewatering. This unit drops the accepted fines into the storage area within reach of the overhead crane.

Wash water from the scalpers and dewatering screws is sluiced to fill areas. This stream of waste water performs another very important function: It carries off unwanted fine dust collected in the electrostatic precipitators. A small steel tank above the sump holds the dust and this is discharged into the waste water flume, providing an easy method of disposing of this material.

Other cement-making raw materials are stored under the overhead crane. A rail spur along the in-



THE 16-in. pipeline discharges above a pair of vibrating screens which scalp off the cement rock. Fines are wasted to fill low areas around the plant. Storage tank, left, puts precipitator dust into the tailing sump

THE TWO 11¼x425-ft. oil-fired kilns in their hurricane-proof concrete building. Ducts along the wall lead from clinker cooler to electrostatic precipitators at far end of kilns

side wall of the storage area provides access for open-top gondolas bringing in clay from the company's pits at Brooksville, Fla.

Iron is supplied by analine sludge—a chemical plant by-product. This is a difficult material to handle and process. The sludge is dark, wet and sticky, hard to handle in conveying equipment. It is introduced into the raw grinding system through the wash mill, along with the raw clay.

Clay is taken from storage to a wash mill. Here it is reduced to a thin slip which is pumped to one of two holding tanks ahead of the first raw mill. Limestone is taken from storage by the crane and placed in feed hoppers ahead of the first mill in the raw grind department.

The two ball mills in this department operate in series. First, reduction of the raw limestone, clay slip and sludge mixture is made in a 13 x 16-ft., single-compartment mill. This mill discharges to a 12-ft.-wide rake classifier. Accepted slurry from this unit is pumped to a holding tank ahead of the second raw grinding mill in the series. But oversize from the classifier is discharged to a 36-in. diam., inclined screw conveyor to be returned to the mill's ferris-wheel feeder for another pass through the mill.

Second mill in the series is a 9 x 36-ft., two-compartment unit. It takes the coarse slurry from a holding tank and reduces it to kiln feed consistency before it is returned to one of five storage tanks for finished slurry.

These tanks are part of a battery of nine which hold raw material slurries in various stages of finishing ahead of the kiln-feed tanks. Two hold the raw clay slip made in the wash mill: One tank is filled while the other is analyzed and emptied into the raw grind circuit.

Another tank takes the product of the first mill while a second is discharging the same material to the second mill. Five tanks hold finished slurry from the second mill before it is pumped to one of the two kiln-feed tanks in the kiln building. These tanks give the plant chemist plenty of leeway to adjust and balance the components of the slurry—if necessary—before it becomes kiln feed. At the same time, they provide plenty of raw material storage capacity ahead of the kilns.

The hurricane-proof, concrete storage building houses the two 11¼ x 425-ft., oil-fired kilns. Each is driven with a 150-hp., 4-speed motor whose speed is determined by operating conditions. A

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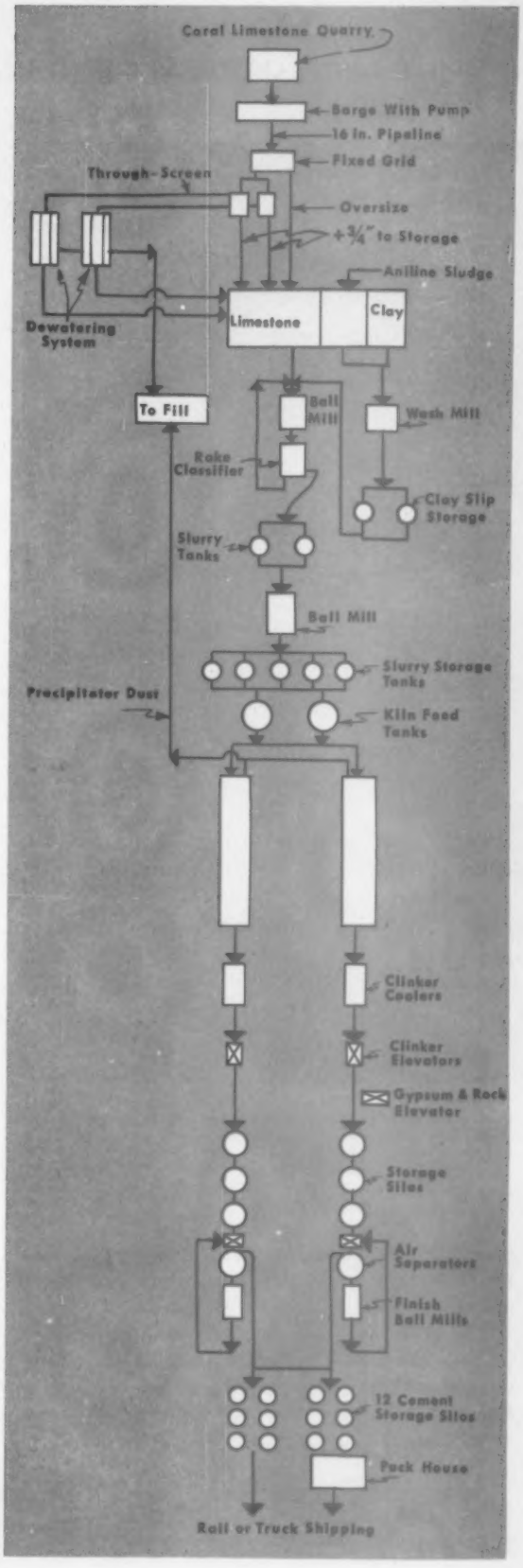

GENERAL PORTLAND MOVES INTO MIAMI MARKET, *continued from p. 91*

THIS HUGE HAMMERMILL receives limestone from a vibrating grizzly and reduces it to sizes to go through a 16-in. pipeline

standby gasoline engine is an auxiliary drive for the kiln, and coal-firing equipment provides an auxiliary source of fuel to fire the kiln.

The exhaust end of each kiln discharges directly into an electrostatic precipitator. All precipitator dust is collected and pumped to the dust storage bin near the sand preparation plant before it is sluiced to fill with the raw materials tailings.

An unusual feature of the dust collection system is the technique for putting clinker cooler air through the electrostatic precipitator. This assures very high recovery of dust in the kiln and cooler system. Clinker cooler air is put through a cyclone collector to take out coarse dust. This is dropped to the clinker conveyor system. Exhaust from this collector is piped the full length of the kiln building and put into a precipitator.

Cement-making materials, clinker, gypsum and other ingredients, are handled in drag chain conveyors and chain-type bucket elevators. After the clinker cooler takes the temperature of the hot clinker down to about 125 deg. F., it is dropped to a drag chain conveyor under the floor. This conveyor discharges into the boot of an elevator which, in turn, discharges clinker to another drag chain conveyor. This conveyor is above the top of the clinker storage silos and distributes clinker to storage. One conveyor system serves each clinker cooler, and the drag conveyors are placed in a bridge which spans the distance from the kiln building to the six storage silos ahead of the finish grinding department.

Gypsum and other materials are brought to storage by rail, dumped into a track hopper and elevated to the drag chain conveyor system to be distributed to storage. One silo is reserved for gypsum and another for the ingredients to make masonry cement. The other four silos and interstices hold clinker.

Adjustable-speed vibrating feeders draw clinker and gypsum from storage. Each feeder can be controlled to draw the exact amount of each raw material required for each type of cement. The discharge point of each feeder is vented to a dust collector, while the oscillating conveyor that gathers these raw materials has a dust-tight cover.

Gypsum and clinker are put into the ball mill through the air separator and bucket elevator that recirculates the ground products of the ball mill. In this way, a separate conveying system has been eliminated.

Each of the two 13 x 16-ft., single-compartment ball mills is served with a line of oscillating conveyors, a bucket elevator and 16-ft. air separator. The product of each mill is returned to the boot of the elevator with an airslide. Oversize material is dropped into the mill with the incoming clinker and gypsum; the finished cement is pumped to storage.

There are 12 cement storage silos, arranged in two banks of six silos with four interstices, holding about 240,000 bbl. of finished cement. Bulk shipments from this storage may be made by truck or rail while the packhouse bags cement for shipment by either truck or rail. END

Part II*

WHAT'S AHEAD IN PERCENTAGE DEPLETION?

by Joseph N. Bell

IN 1954, THE INTERNAL REVENUE SERVICE ran an audit on a prominent midwestern rock products producer. As a result of this audit, the IRS disallowed most of the percentage depletion deduction that the company had taken for three years on the basis of a section in the 1951 Revenue Code. The section permitted producers of "metallurgical and chemical grade limestone" to deduct, as their allowance for depletion, a percentage of their gross income from mining.

In disallowing these deductions the Treasury Department, in effect, said to this particular taxpayer that it didn't care what Congress had said; the only interpretation that counted was Treasury's, and the IRS intended to make it stick. The taxpayer was equally determined, and there began a series of conferences, hearings, and finally, court actions.

Suit was filed by the taxpayer in 1956 for a refund of the depletion money that had been denied them. Although the IRS made every effort to prevent the case from coming to court, it was

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*See *Where do we stand on depreciation and percentage depletion?* Part I, October 1959, ROCK PRODUCTS, page 85

THESE MEMBERS of the Ways & Means Committee of the House of Representatives will have a lot to say about how the rock products industry will fare taxwise during the next couple of years. Here, Chairman Wilbur Mills (right) consults with two of his committee: A. J. Forand (left) and T. J. O'Brien

finally tried late in 1958. The judgment was emphatically in favor of the taxpayer. The government's only witness was an IRS-employed engineer who simply parroted what the IRS would have the depletion law mean.

This is not an isolated case. It's happening to dozens of rock producers all over the country. It's expensive and time-consuming, both to the taxpayer and the government (whose bills must eventually be footed by the taxpayer).

As the defendant in one of these cases so aptly pointed out to the Ways and Means Committee: "Although not a single case has sustained their position, the government continues to litigate this question, obliging the government for what must amount to millions of dollars in interest at the statutory rate of six percent. I would think that, even today, the government could borrow money at a cheaper rate. Sometimes I begin to wonder if the Internal Revenue Service has not concluded that the most effective way to destroy the percentage depletion deduction, which Congress had the effrontery to enact over its objections, is to keep the producers so busy with tax litigation that they cannot earn any income against which they might apply the prescribed percentages."

It has appeared to dozens of courts that Treasury is not only being unreasonable, but is on completely untenable legal grounds in the stand it has taken on percentage depletion in the rock industries. Yet the sad fact remains that no amount of wishing the IRS would go away is going to make it so. The Revenue Service is attempting to bulwark its position by having it written into law; it apparently feels justified in the stand it has taken.

How does Treasury explain this stand, and what can be expected of the IRS in the months to come in the area of percentage depletion? To answer these questions, I talked with Treasury officials and studied Treasury's testimony at the Ways and Means' hearings.

The gist of Treasury's position was summed up in a remarkably succinct statement by Treasury Secretary Robert Anderson. He said:

"In the budget message of the President . . the President stated that the Treasury Department would recommend an amendment to the Internal Revenue Code specifying the treatment processes which shall be considered mining for the purpose of computing percentage depletion in the case of mineral products. Early last year, I testified . . . on the need to revise the law in order to preclude excessive depletion deductions for the brick and cement industries. My recommendation was made as a result of a series of court cases which permitted manufacturers of brick and cement to compute percentage depletion on the basis of the selling price of the finished manufactured product rather than on the value of the clay or cement rock before it is manufactured.

"It is now apparent under the court decisions that manufacturers of many other products may obtain depletion allowances based on gross income derived from the sale of finished products. This can only result in increasing the depletion deduction for all minerals severalfold—in extreme cases as much as 100 times. I do not believe that depletion on such an inflated scale is either reasonable or was intended. If permitted, the revenue losses will indeed be serious.

"The problem arises because the term 'mining' is defined in the statute to include the ordinary treatment processes normally applied to obtain the 'commercially marketable mineral product or products' which, in many instances, may be an expensive finished product. Accordingly, in order to prevent excessive depletion allowances, I recommend the immediate elimination of the phrase 'commercially marketable mineral product or products' from the statute and the substitution of a new definition of 'mining' which will specify the allowable treatment processes for the various minerals.

"The proposed legislation would not only prevent a substantial loss in revenue, but would also help resolve difficult and complex problems in determining for many mineral industries the stage at which taxpayers first obtain a commercially marketable mineral product."

This statement was amplified by the testimony given before the Ways and Means Committee by Assistant Treasury Secretary David Lindsay and Assistant General Counsel Jay Glassman. The gist of their argument can be distilled into the five following points:

1. The present statute is ambiguous because of the language in the definition of "mining."

2. Treasury has long interpreted the statute to mean that any processing not specifically named or "equivalent to those named" aimed at marketing a finished product should be disallowed in figuring percentage depletion.

3. The courts' liberal interpretation of what constitutes a "commercially marketable mineral product" is encouraging more and more taxpayers to include in their depletion base income from manufactured products never intended under the depletion law.

4. The present litigation on this point is vast. It can be expected to grow unless it is more clearly stated in a new law.

5. Therefore, Treasury strongly urges the passage of a new percentage depletion law that would state specifically what are and what are not to be considered mining processes in figuring percentage depletion. Here is how Treasury officials stated this point before the committee:

"The processes which will be treated as necessary to make the mineral or ore suitable for shipment are those which are necessary to bring the mineral or ore to the physical form and condition in which it is capable of being transported, as distinguished from those processes applied to make the mineral or ore salable.

"We didn't name the cutoff points for each mineral. We stated the general principle that those processes necessary to separate waste materials from the mineral would be allowed as a mining process while those producing a chemical change —with a few special exceptions—would normally be treated as a manufacturing process."

The rock industry principally affected by the new law would be portland cement, where the cutoff point would be established at the kiln, and burning would be considered a manufacturing process. The main stumbling block for sand and gravel and crushed stone would be the distinctions set up in the proposed bill between crushing and pulverization—the former an allowable mining process, the latter, not.

When I discussed this with a high-ranking Treasury official, he told me: "The courts have, in effect, vacated our regulations. Congress won't pass a new law. In the meantime, we're caught in the middle; we're operating on a case-to-case basis. We're as anxious for clarification as the people in your industry, and we're trying desperately to get the regulations in clear, understandable language. To this end, we're working closely with the committee to come up with workable legislation. But until Congress passes a new depletion law, we'll continue to be in a mess."

What are the prospects for a new bill? "I think there will be a bill," he said, "but I doubt if it will be sooner than a year, and it may be much longer than that. There are many complexities; your problems are only a small part. It's impossible now to predict to what extent the new bill will affect the rock industries."

The focal point of all this tugging and pulling is the House Ways and Means Committee, which must finally decide if there will be a new bill at all and, if so, what it will contain.

Their position, historically and theoretically, is one of objectivity. They consider the arguments of Treasury and those of the industries represented; then they draw up a new statute representing the ultimate in fairness to all. Unfortunately, things just don't work this way.

Mixed up irrevocably in the picture are a number of important political considerations, chief among them the feelings of the members' constituents; these include the powerful petroleum industry, the largest benefactor of percentage depletion. Though not directly affected at the moment, it is quite uneasy about seeing all this fuss stirred up. Oil men still remember with horror the efforts made during the Truman administration to cut down on petroleum depletion.

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The House Ways and Means Committee has scheduled extensive hearings on several phases of the tax code. It has just been announced that the panel discussion of percentage depletion and exploration and development cost will be held Tuesday, December 1, 1959. The panelists are as follows:

ROLLA CAMPBELL, *Island Creek Coal Company*

CHARLES GALVIN, *Southern Methodist University*

RICHARD GONZALEZ, *Humble Oil Company*

ARNOLD HARBERGER, *University of Chicago*

HERBERT JACKSON, *Pickands Mather Company*

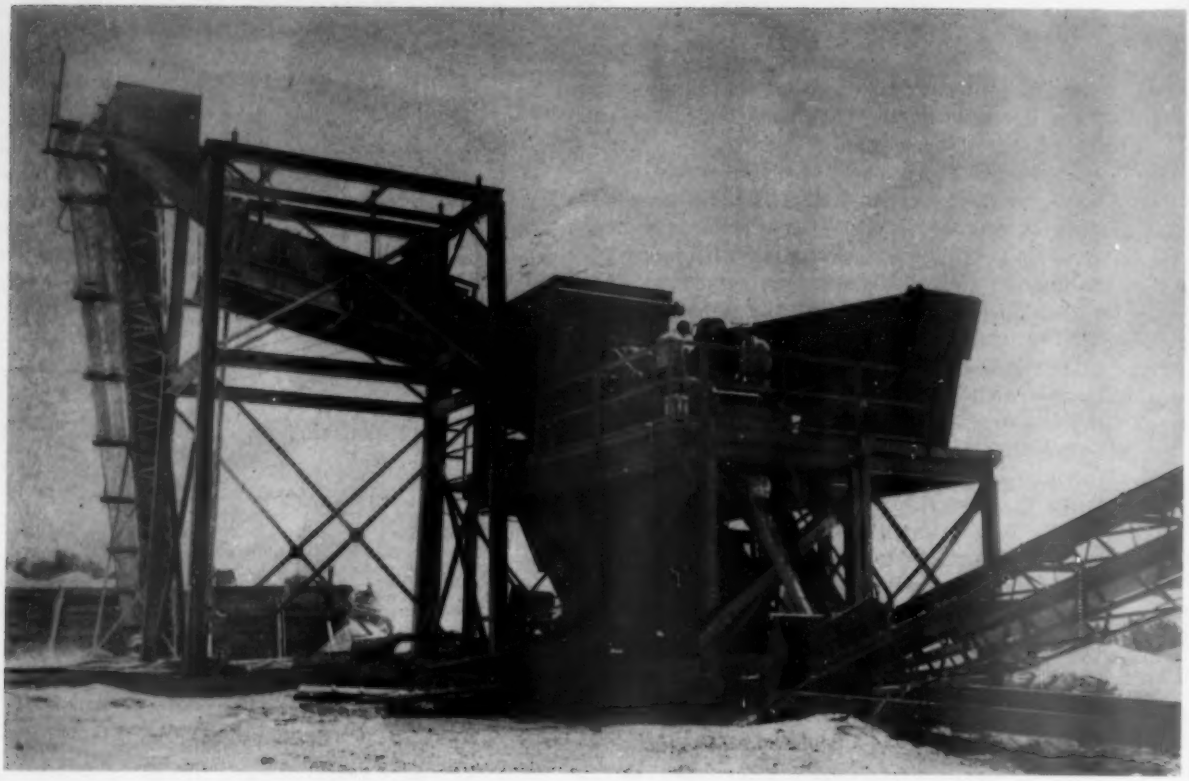
SCOTT LAMBERT, *Standard Oil of California*

JOHN MENGE, *Dartmouth College*

L. J. RANDALL, *Hecla Mining Company*

JOSEPH SNEED, *Cornell University*

PETER STEINER, *University of Wisconsin*



COMPACT semiportable media plant is fed by dozer (rear). Atop plant itself, operator Bill Feltes (left) and manager Andrew Peirce, Jr., look at rinsing screen; behind them are separatory vessel (left) and densifier

TWO STOCKPILES of finished concrete stone are replenished, one at a time, by media plant in background

AN INDUSTRY FIRST: HMS FOR CRUSHED STONE

Illinois producer tries new media-plant design for a new purpose—removing chert from limestone

by Kneeland A. Godfrey, Jr.

HEAVY-MEDIA BENEFICIATION, a strong ally of producers of high-grade gravel, has come to the crushed stone industry. The first example of a growing interest in HMS among crushed stone producers is provided by Conco-Western Stone Co., North Aurora, Ill. They installed a plant last June to upgrade 50 tph. of chert-bearing limestone. Highly successful, the unit removes all but .2 percent of the 3 to 4-percent chert, along with soft, friable limestone fractions that are deleterious to quality concrete.

Not only was Conco-Western the first in the crushed limestone industry to turn to HMS, it also is the first in the entire aggregates industry to try a new plant—one manufactured by Eagle Iron Works using an Ore & Chemical Corp. separatory vessel. (The units have been installed since then by other aggregates producers: Gillissee Construction Co., Grand Rapids, Mich., and Whittaker & Gooding, Clear Lake, Mich.)

Lyle Sitterley and Plant Manager Andrew Peirce, Jr., are highly pleased with the new equipment. Their product far exceeds the state highway department specs which permit a one-percent deleterious fraction. This efficient separation, together with the unit's washing action, assures users of a concrete in which "popping" of aggregate is eliminated, and in which air content can be controlled precisely.

Lyle Feltes of nearby Aurora Ready Mix, which uses much of Conco-Western's beneficiated stone, notes that his sales are definitely up since installation of the new media plant. Spalling and popping of concrete in the area was serious last winter, he recalls, for it was one of the most severe in 50 years. This alerted the Illinois Toll Road Commission and other users of his concrete to be doubly conscious of the need for sound aggregates.

Most novel section of the new media plant is the Ore & Chemical Corp. (OCC) separatory vessel, the heart of the unit. Basically, it is a short, round-bottomed trough with closed ends. Like other HMS plants, it uses a mixture of water and iron particles to achieve a heavy media which will float off the lightweight, unsound particles reaching it.

Feed enters the unit on a broad, flat chute, spreading out in a thin layer to permit good specific-gravity separation. The unwanted or "float" stone simply floats over a weir on the opposite side of the vessel with the discharging iron-water medium. But "sink" is taken from the unit in an ingenious way.

A slow-moving rake travels back and forth across the semicircular bottom of the vessel, lifting the heavy sink up and over one side or the other. (Screens at the sides of the vessel alternately engaged by the upcoming rake keep float from discharging with the sink.)

Otherwise, the plant is similar to other HMS operations. A rinsing screen removes for reuse the valuable magnetic medium solids from the now-separated chert and limestone. A magnetic drum-type separator cleans the medium which is then de-watered by a densifier (screw classifier); the medium is then recycled. Several pumps circulate both media and water.

Three operating advantages are claimed by developers of this unit: First, the liquid medium is kept quite still, permitting a good, "clean" separation. The traveling rake moves at only four to five oscillations per minute.

Second, very wide feed-entry and sink-discharge openings are provided. In this way, feed enters in a thin ribbon, often only one particle deep. The

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AN INDUSTRY FIRST: HMS FOR CRUSHED STONE, *continued from p. 97*

float can't be trapped under sink stone and carried away in the wrong group.

How effective is Conco-Western's media plant? A good answer is provided in a report of some tests made by the Missouri State Highway Department, preliminary to investigating the potentiality of an HMS plant for the removal of shale and shaly limestone from the products of certain Missouri quarries. Made by the Department's Research Section, the tests involved determination of the specific gravity and porosity of individual particles of stone from both float and sink products of Conco's HMS plant, resulting from treatment of stone from Conco's quarry.

The Missouri report concluded that the unit made a very clean "cut;" maximum overlap in specific gravity between the heaviest float particle and lightest sink particle was only .02.

With specific gravity of the heavy media running at 2.61, the heaviest chert particle registered only 2.49, making the separating job fairly easy. But, the Missouri report notes, "A good elimination of chert could have been obtained even had the chert been somewhat denser."

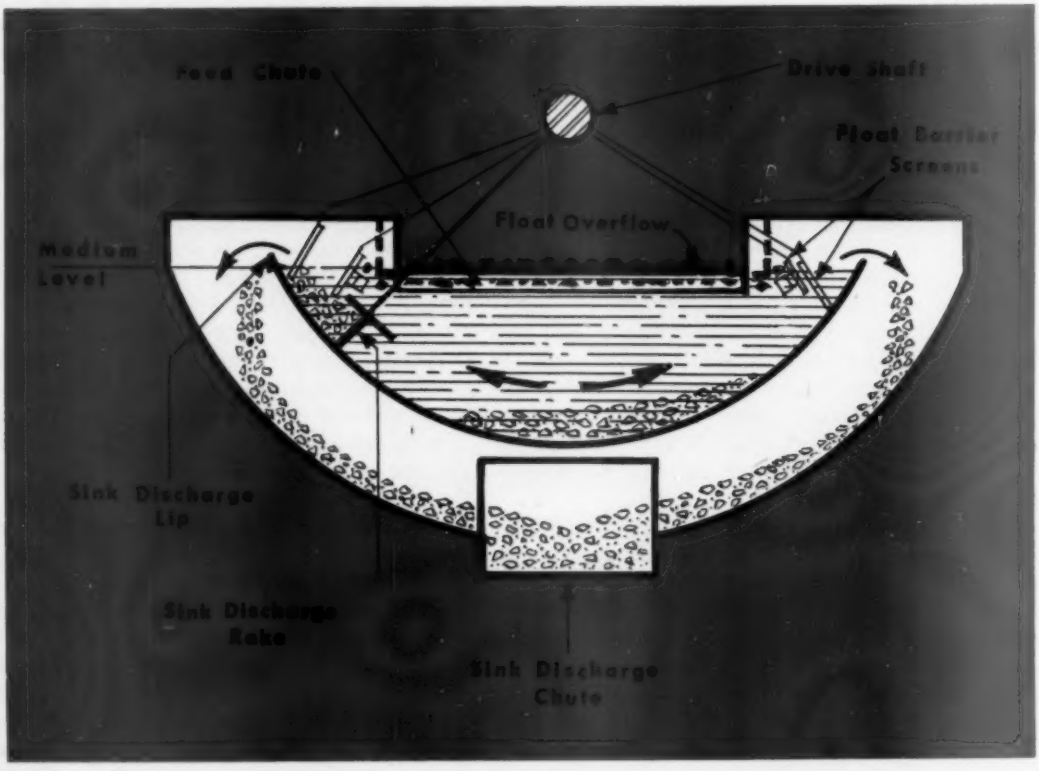
Analysis of Media-Treated Stone

Fraction	Sp. Gr.* (range)**	Porosity, percent (range)**
Gray Limestone in Sink	2.65-2.81	1.86-11.09
Chert in Float	2.30-2.49	7.92-20.87
Gray Limestone in Float	2.34-2.66	9.51-20.29

*Vacuum saturated, surface dry; **Of values for 15 random particles

In fact, the plant did prove it could do just that, by removing some lightweight gray limestone along with the white chert. (The color difference made it easy to distinguish between the two.) This lightweight gray limestone, which makes up 40 percent of the float, has lower specific gravity than the sink limestone, and considerably higher porosity, as the table above shows. Thus, concludes the Commission, "It seems likely that the non-chert material being removed in the float is of inferior quality to that remaining in the sink."

Recently, reports Superintendent Peirce, sp. gr.



has been set at 2.55. About 70-percent magnetite and 30-percent ferrosilicon are used to get this level.

"Why did you choose this type of plant?" President Sitterley was asked. Most persuasive argument put to him, he indicates, was a test run on a 50-ton sample of his stone made at OCC's White Haven, Pa., pilot plant. Results at this production-type operation were so impressive that Mr. Sitterley was convinced of the ability of the unit to do the necessary job.

The pilot plant has proven to be a real sales clincher, reports G. W. Schuetz of Ore & Chemical Corp. Prospects are told, in effect, "Bring down a carload or truckload of your material. We'll run it in your presence at a production tonnage rate; you can take your own samples to convince yourself the unit can do what we claim." A wide variety of ores and minerals from all over the world has been tested there.

Erection of the media plant took just one day at North Aurora, since the unit is compartmented and semiportable. Five local steelworkers did the job with the aid of two 10-ton cranes. While such semiportable plants cost slightly more than stationary equipment, the difference is more than offset by lower assembly and shipping costs.

Conco-Western particularly likes this portability. Mr. Peirce advises that his two portable crushing plants and the media operation probably will be moved later to an affiliated plant at Utica, Ill., and their portability will make the move relatively easy. All parts of the heavy-media plant, for instance, can be carried on four semitrailer trucks.

The semiportable media plant is available in sizes from 50 to 150 tph., and stationary plants ranging in capacity up to 300 tph. are available.

Two portable plants do the primary processing at Conco-Western. They are fed a steady stream of limestone by a 1½-cu. yd. power shovel and two 15-ton, off-highway rear dumps. Set up in 1957, the two crushing plants process limestone for such

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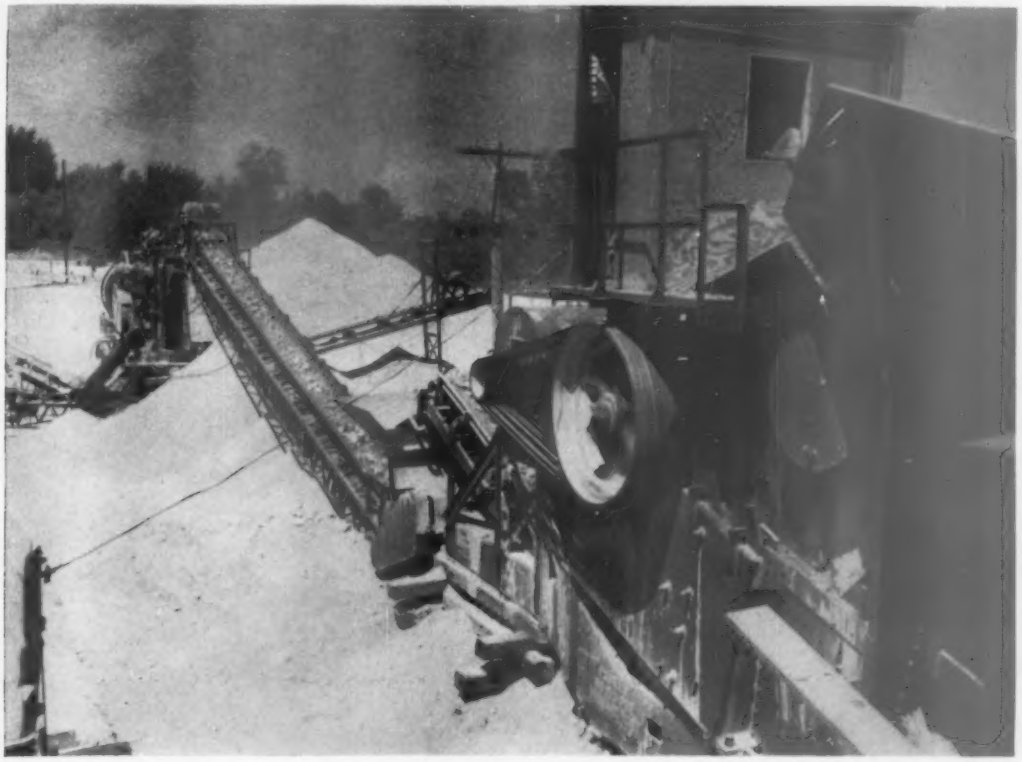
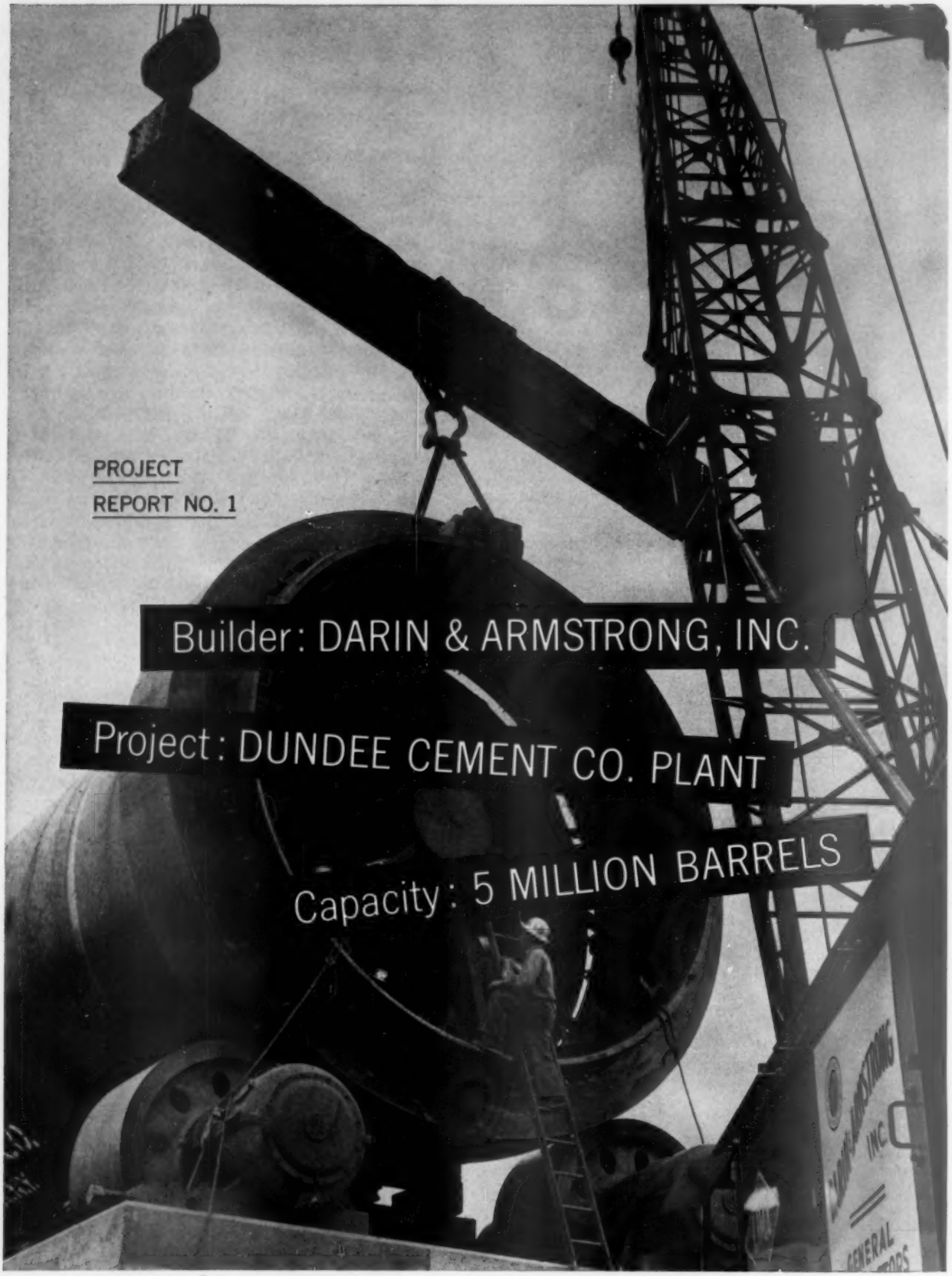
BIG 3042 jaw crusher dominates the portable primary crushing plant at Conco-Western




PROJECT
REPORT NO. 1
Builder: DARIN & ARMSTRONG, INC.
Project: DUNDEE CEMENT CO. PLANT
Capacity: 5 MILLION BARRELS

The plant is located about 40 miles southeast of Detroit. It was designed by the engineering department of the St. Lawrence Cement Company. Although the plant site covers an area of 1,500 acres, maximum operating efficiency will be achieved by concentrating all buildings and process facilities in an area of less than 900 x 1000 ft.

When completed and producing (this year), the Dundee plant will be one of the largest and most efficient on the North American continent.

Darin & Armstrong—the nation's largest builder of industrial plants—is especially qualified for projects of this type. They have the staff and facilities to handle both the building construction and the installation of machinery and equipment.

Because of the interest expressed by a great many cement manufacturers, Darin & Armstrong will publish, in this magazine, a series of reports on this project through its various stages of construction.

The mill building (shown here under construction), houses five 12' x 36' 2-compartment mills, directly coupled to 2,750-hp. motors. The kilns will have a capacity 50% greater than any other kilns in operation in this country. Under a firm price contract, Darin & Armstrong erected the mills and kilns in record time with the use of their two 100-ton crawler cranes.

DARIN & ARMSTRONG, INC.

GENERAL CONTRACTORS

DETROIT CHICAGO CINCINNATI

Enter 1088 on Reader Card

AN INDUSTRY FIRST: HMS FOR CRUSHED STONE, *continued from p. 99*

PORTABLE SECONDARY PLANT has 4 x 12-ft. vibrator, 1036 jaw and 4022 roll crushers. Portable stacker in foreground, with wheels turned for stability, sends minus 1-in. crushed product to final screen

users of good quality stone as Aurora Ready Mix and the Toll Road Commission.

The primary portable holds the hulking primary jaw crusher, a 3042 unit. Reducing the gray limestone to minus 6 in., it drops the stone to a belt leading to the secondary crush-screen plant.

Here 1036 jaw and 4022 roll crushers make the final reduction to usable sizes, with a vibrating screen doing the sizing. Plus 2½-in. rock reaching this portable is scalped off the screen to the jaw, set at 2½ in. Product is recycled to the top of the screen. Stone remaining over 1 in. is now chuted to the roll crusher where it is reduced to minus ⅜ in. This product, too, is recycled to the vibrator.

Four products are made: First, minus ¾-in. No. 14's are screened off upon reaching the secondary plant. This medium-quality material is used as a roadbase rock. Second, 2½ x ¾-in. material is also screened off upon first reaching the vibrator. This 2½-in. rock also is sold as roadbase material.

The operation's other two products are all-crushed from the larger rock sizes. Both are chuted off the secondary plant to a second single-deck vibrator, where this minus 1-in. material is split at ⅜ in. Minus ⅜-in. stone, valuable as asphalt chips, is stacked off to one side as a finished product.

The larger 1 x ⅜-in. concrete stone, however, is stockpiled beside the belt leading up to the heavy-media plant. Though only one pile is built at a time, stockpiles of both 1-in. and 1½-in. stone are available for feeding to the media plant. (Changing one screen cloth at the secondary plant's vibrator changes topsize, and simply shifting the portable stacker belt keeps the two finished sizes separated.)

A husky D8 bulldozer pushes the stone up to the feeder loading the media-plant belt. The dozer operator picks either the 1-in. or 1½-in. stone, depending on which size is in demand. The stone then travels at 50 tph. up to the media plant, the operation of which is familiar to ROCK PRODUCTS readers. The dozer, a multipurpose tool, is useful also in cleaning up the quarry and under the plant's conveyors.

Once through the media plant, finished stone is stockpiled by the last of seven portable conveyors in the plant. It is easily shifted from the 1-in. to the 1½-in. finished stone pile when the dozer operator shifts from one size feed to the other.

The four sizes of ground-stored stone are rehandled into delivery trucks by a 2½-cu. yd., front-end loader. Rubber tires permit the operator to travel quickly between the four scattered piles of stone, and four-wheel drive gives plenty of needed traction. END

MAJOR EQUIPMENT REFERENCE

Power shovel, 1½-cu. yd.	Marion Power Shovel Co.
Rear-dump trucks, (2) 15-ton	Euclid Division, GMC
Portable primary crusher plant, #153-pre 3042 jaw	Pioneer Engineering, Division of Poor & Co.
Secondary screen-crush plant (45-VE duplex) with 4 x 12-ft. screen, 1036 jaw, 4022 roll	Pioneer Engineering, Division of Poor & Co.
Portable stacker conveyors (7)	Barber-Greene Co.
Heavy media separation plant	Eagle Iron Works
Dewatering screen	Lippman Engineering Co.
Rinsing screen	Simplicity Engineering Co.
Densifier	Eagle Iron Works
Separatory vessel	Ore & Chemical Corp.
Magnetic Separator	Dings Magnetic Separator Co.
Bulldozer, D8	Caterpillar Tractor Co.
Front-end loader, 2½-cu. yd.	Clark Equipment Co.

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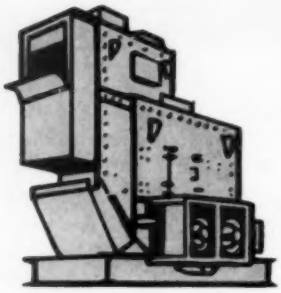
1—20" Intermediate—in the crushing building.
2—#49½ Tertiaries—in the crushing building.
1—37½ Clinker Crusher—after the kilns.

KENNEDY Impact Crushers



2—36" x 48" Senior Cubers—in the crushing building.

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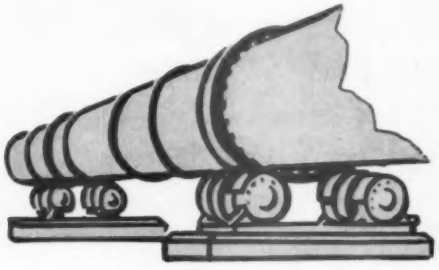
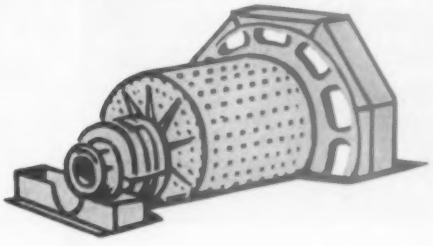


KENNEDY Ball Mills

1—11′ x 20′ 2-compartment Raw Mill.
2—11′ x 20′ 2-compartment Finish Mills.
2—7′ x 12′ Coal Mills.



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Here's a pension plan for rock products producers

Member companies of well-organized trade associations reap untold benefits from various projects undertaken by the association in research, marketing, public relations—projects which, for reasons that are primarily economic, the individual members could not attempt on their own.

The National Sand & Gravel and National Ready Mixed Concrete Associations have extended this approach to the field of employe benefit programs. The economies that have resulted and have been made available to their member companies should prove to be interesting reading to all our producers. ***The Editors***

Case Study

This Corporation employs forty employees and is owned by two stockholders. The Plan provides that all employees are eligible after five years of service and attainment of age thirty. On this basis fourteen employees are initially eligible for the Plan.

Net Annual Payment by Corporation	$12,000
Estimated tax credit at 52%	$ 6,240
Net Annual after-tax cost to Corporation	$ 5,760
Net Annual deposit paid under the Plan for two Stockholders *(Included in $12,000 payment)*	$ 5,880

Disposition of $12,000 payment if no Plan

Amount Available for Dividends (after tax @ 52%)*	$ 5,760
Personal Income tax on dividend payments (50% bracket) to two Stockholders	$ 2,880
Net amount available after taxes to Stockholders	$ 2,880
Personal Annual advantage to two Stockholders by adopting Plan ($5,880-$2,880)	$ 3,000

In addition to the personal advantage to the two stockholders, twelve other employees are provided liberal retirement benefits.

* If the $12,000 was paid to the stockholders as additional compensation, in lieu of dividends, each stockholder would gain a mere $60 more than under the pension plan ($6,000 net after 50% personal tax if paid as extra compensation compared to $5,880 if paid under the pension plan) but no retirement benefits would be provided for the twelve other employees.

IN THE PAST 20 YEARS the number of privately sponsored pension plans has been growing at a constantly increasing rate. According to Treasury Department figures, there are almost 50,000 employe retirement programs now in operation.

A significant fact emerging from the skyrocketing of private pension plans is this: Small and moderate size corporations are adopting them. This is because they realize that without one, they actually have a retirement plan of the most expensive type. In the sand and gravel industry, until a few years ago, such programs were considered outside the reach of all but larger corporations. Now, through the Master Retirement Trust set up for member companies of National Sand & Gravel and National Ready Mixed Concrete Associations, all companies, regardless of size, can establish their own retirement programs. To repeat, they can't afford not to.

Most businessmen are aware of the tax savings inherent in a qualified pension plan. Payments to a qualified plan to provide retirement benefits are deductible from corporate income, but the employe is not taxed until benefits actually are distributed to him. In addition, all interest earned from monies accumulated is also tax free. An attached case study points up the value of a plan to a moderate size company.

But the tax advantages are only part of the story. Unless management is willing to fire long-service employes when they become too old to handle the job efficiently, there is no alternative but to pension them. This may be done in one of two ways. Leave them on the payroll in perhaps a

Please turn page

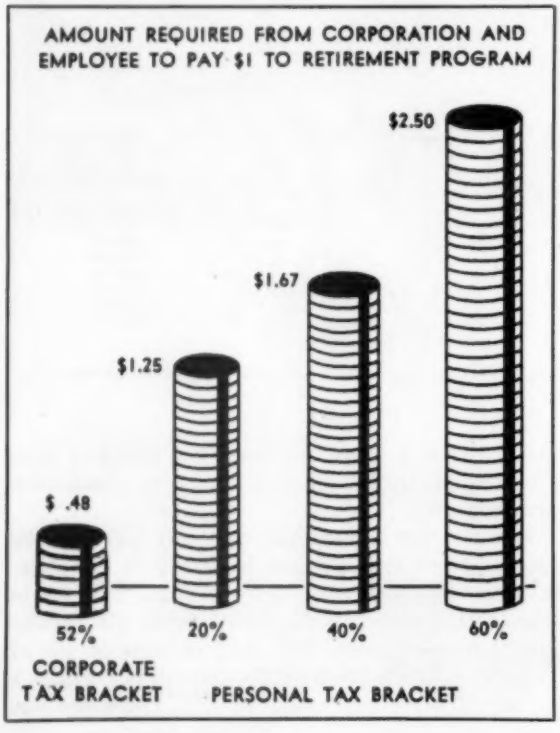
HERE'S A PENSION PLAN FOR ROCK PRODUCTS PRODUCERS, *from p. 107*

less responsible job, or provide them with a pension payment out of regular corporate income. Either method is expensive.

If left on the payroll, the employe almost certainly will be drawing a higher amount than would be paid under a qualified retirement plan. Besides, his net contribution to the firm may be a negative one. What is more discouraging to a young ambitious employe than to see old, long-service employes blocking the way to advancement?

The second method is equally expensive. The total contribution under a "pay-as-you-go" plan will be approximately 40 percent greater than under a funded plan, assuming an employe lives his average life expectancy. If an employe contribution is utilized under the plan, the savings would be increased substantially.

Employers also know that an informal pension plan is costly but has none of the tangible and intangible benefits of a qualified plan. A qualified plan will help solve some of the most pressing problems facing the moderate size corporation today. It will: Attract better personnel, reduce employe turnover, improve employe morale, encourage older employes to train their successors, strengthen good will in the community.



To determine the advantages of a well-designed, Treasury-approved retirement program for their member companies, the NSGA-NRMCA appointed a committee from their boards of directors to investigate the feasibility of an over-all program that could be adopted by the individual member companies for the benefit of officers and other employes. The program was to provide active and associate members of the two associations with a retirement plan tailored to their needs. The plan would reflect the combined judgment and experience of men and organizations long identified with the field of employe pension plans.

As a result, the NSGA-NRMCA Master Retirement Trust was established for adoption by active and associate member companies. The Master Trust provides economies in operation—substantial savings in administrative costs, trustee fees and legal expenses.

It also provides great investment diversification. All funds contributed under the NSGA-NRMCA Retirement Trust for investment purposes are invested in a single pooled, or group, trust. The trustee invests these commingled amounts in the same kind of diversified and productive securities as in any qualified trust portfolio. This means that each participating company enjoys the greatest amount of investment diversification and potential yields through the NSGA-NRMCA Retirement Trust.

The Master Trust also offers the utmost in flexibility. In adopting it, each member company's plan is designed and tailored to meet its specific needs and desires. Of further importance is the fact that all the principals involved in the handling of each individual participating member company's plan are not only qualified from the standpoint of experience, but are familiar with the problems of the industry.

In this way, the NSGA-NRMCA Retirement Plan has been set up so that the member companies can reap the benefits of the savings made effective by using the association approach. At the same time, they retain complete freedom of choice and flexibility to make the terms and provisions of their own individual plans to meet their own individual needs.

While retirement plan design may seem to be a complicated problem, member companies of the associations need to answer only four basic ques-

Please turn to page 140

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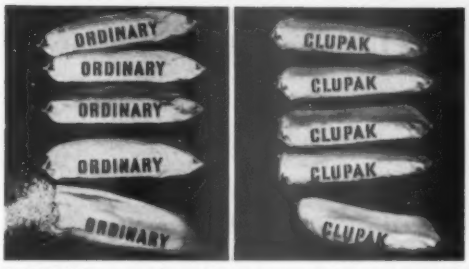
Cotton seed meal	Salt
Dehydrated alfalfa	Sand
Feed	Seed
Flour	Soybeans and meal
Fertilizer	Steric acid
Frits	Sugar
Hydrated lime	Sulphate of potash
Meal	Talc
Oyster shells	



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White quartz

GENERAL VIEW OF PLANT as seen from primary hopper. Under inclined belt conveyor can be seen two Kue-Ken reduction crushers, a jaw and a gyratory. Plant produces 11 sizes of gravel, two of sand, at an estimated rate of 250 tph.

MOST OF THE MATERIAL is dug with a cable dragline and dumped over a reclaim tunnel serving the plant; however, a link-belt dragline loads some materials for trucks that haul to the plant

ONE OF THE MOST UNUSUAL aggregate deposits of its type in the United States is owned by Joe Chevereaux near Auburn, Calif. Sparkling like snow in the stockpile, the pure white, well-rounded quartz gravel makes excellent concrete aggregate. It also has become very popular throughout northern California for use in exposed aggregate work as well as landscaping aggregate. Joe can vouch for that because, as a ready-mix producer and contractor, he is his own best customer.

Business is brisk for Chevereaux products in the Auburn area, which derives its wealth not from gold mining as in bygone days, but from fruit growing. And Auburn is so situated, on Highway 40 that connects Reno and San Francisco, that highway work is a little above average.

The deposit owned by Joe Chevereaux is 11 miles northeast of Auburn and faces Bear River. Although the gravel is not large, two crushers are available for crushing any oversize. One is gyratory, the other, a jaw.

The plant has a capacity of 250 tph. and can produce 11 different sizes of gravel and two of sand, all at the same time. A cable dragline wins material from the pit, then dumps it over a reclaim tunnel where a shuttle belt operates. This belt serves as a feeder to the main line serving the plant, but there really is no feeder in the tunnel—the rock is free flowing. Sometimes material travels to the primary units via another route: A dragline is available that loads it into trucks for the trip.

There are three screens in the plant. The first, a 2½-deck scalper, routes oversize to either of the crushers. The jaw crusher is 6 x 16 in. and handles 2½ x 6-in. rock, taking it down to 1 in. The 28-in. gyratory is set on the fine side to produce ½-in. material from 1½ to 2½-in. feed at a rate of 30 tons per hour.

Throughs from the scalper continue onto the two, 2½-deck washing screens. Mounted parallel, they are used for sizing, one producing three sizes of rock and ¼-in. concrete sand, and the other producing three sizes of rock and ⅛-in. plaster sand. Two cones recover concrete and masons sand.

Next to Fred Campbell, superintendent, the welder is one of the busiest men in the plant. It

sparks bonanza for Chevereaux

WELDER JOE LEAL works on the reclaim tunnel over the primary feeder. In the foreground is a grizzly to be used for returning material from the plant for reprocessing. Gravel is free-flowing material; no feeder is necessary

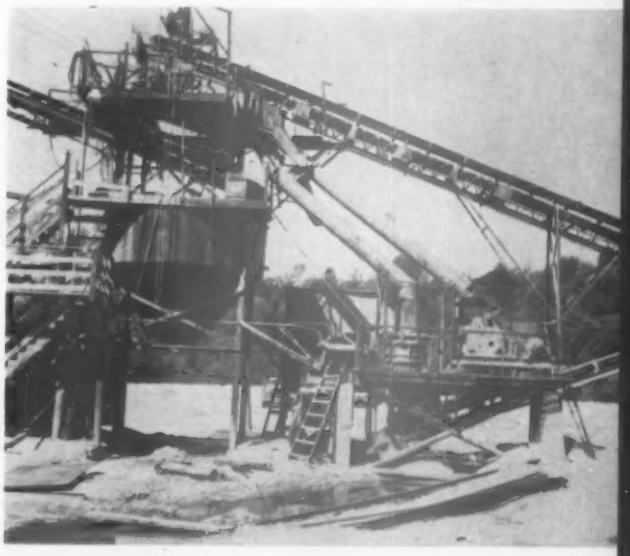
IN THE STRUCTURE just below the deck is a No. 8 Telsmith sand cone that produces concrete sand; off to the right on a separate little tower of its own is a No. 6 Telsmith cone for preparing masons sand

is Joe Leal's job to build up worn machinery parts with hardsurfacing metal. The very hardness of the gravel, which makes it so desirable in concrete mixes, also makes the welder's job a necessary one in the Chevereaux plant operation. END

by Walter B. Lenhart

MAJOR EQUIPMENT REFERENCE

Crushers (2)	
6 x 16-in. Kue-Ken jaw }	
28-in. Kue-Ken gyratory }	Straub Mfg. Co.
Cable dragline	Sauerman Bros., Inc.
Dragline	Link-Belt Speeder Corp.
Trucks, 14-ton	International Harvester Co.
Screens (3)	
2½-deck scalping, 4 x 10 ft.	Bodinson Mfg. Co.
2½-deck washing, 4 x 8 ft.	Screen Equipment Co.
2½-deck washing, 4 x 12 ft.	Allis-Chalmers Mfg. Co.
Cones (2)	
Telsmith No. 6 }	
Telsmith No. 8 }	Smith Engineering Works
Hardsurfacing metal	Stoody Co.



THE TWO CRUSHERS are situated on the slightly elevated platform underneath the conveyor gallery that receives from the Bodinson scalper. One of the crushers is a 28-in. gyratory; the other, a jaw. Both are Kue-Ken units

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Let's look at sampling methods for statistical reliability and validity

Do cement tests really mean anything?

Anonymous

WHENEVER I HEAR THE ARGUMENTS tossed back and forth about cement uniformity, one thought asserts itself: Let's not get ahead of ourselves. Let's not make the mistake of trying to sample and test cement until we first determine that our testing methods are accurate.

It is somewhat disconcerting to observe that, so far as I know, there is not a single published report to show that any of the standard cement tests have been statistically examined for reliability, precision and accuracy, according to the criteria established by recognized authorities in the testing field.

A whole science for the design of experiments, methods of sampling, analysis of measurement data and qualification of test methods has been developed during the last 30 years. These statistical theories, concepts, techniques and methods are absolutely basic in any study of experimentation, sampling or qualification of test methods. It is indeed a serious mistake for anyone engaged in the sampling and testing of materials to dismiss or ignore them as simply highbrow mathematics. There are actually occasions and situations where an ignorance of or failure to use them can completely nullify or invalidate otherwise meritorious work.

The point that I'm making is this: There are available well established and indisputably valid techniques that can help in establishing the re-

Please turn page

This article was received from a well known research engineer in the industry. It is published anonymously at the request of the author.

liability of test methods and for estimating precision and accuracy. Let's make use of them. For example, see the study by Eugene L. Grant, Statistical Quality Control (McGraw-Hill Book Co., Inc., N.Y., 1946), particularly pages 156-158.

Or, see James A. Mitchell's "Control of the accuracy and precision of industrial tests and analysis," Analytical Chemistry, December 1947, especially page 964. Another useful source is S. S. Wilks' "Sampling and its uncertainties," Symposium on usefulness and limitation of samples, authorized reprint from Proc. ASTM, Vol. 48, 1948, especially page 6.

Several factors bear on cement uniformity. You are already well aware of some of them. ROCK PRODUCTS carried a discussion of uniformity of portland cement in its May 1959 issue entitled "Where is the cement industry headed?" Prominent members of the industry mentioned a number of items having a decided bearing on uniformity, such as storage, blending, amount and nature of control equipment in the plant, effect of ASTM specification requirements, automation and so on. The article is most timely and it emphasizes that the consumers of portland cement are very likely to insist on greater and greater uniformity in the future.

Uniformity is just as intimately related to factors not mentioned in the above article. These are specifications, sampling plans, test methods and manufacturing costs. If the cement industry will be required to manufacture an increasingly uniform product, it is obvious that the degree of uniformity in any of its properties will have to be defined in increasingly comprehensive and tightened specification requirements. As specification limits and tolerances become narrower, it usually results in an increased manufacturing cost to the producer. And it always results in a greater producer's and consumer's risk in the exchange of the product.

For the producer, the risk is that of having the product erroneously rejected because of the inherent and unavoidable variability of the sampling and testing procedure. The consumer runs the risk of erroneously accepting a product because of the variability of the sampling and testing procedure. When both risks are low, a product actually conforming to specification requirements will nearly always be accepted, one which does not, will nearly always be rejected.

The risk can be kept low only when the sampling plan and testing procedure are specifically designed to maintain both risks at some given and preferably mutually agreed-upon level. If this is done, however, sampling and testing costs will increase unless the precision of the test method can be increased. Uniformity will not, in general, be improved until specification requirements make it mandatory for manufacturers to do so; and no tight specification ever will be satisfactory or workable unless it is accompanied by a sampling and testing plan that can be demonstrated to give both producer and consumer a reasonably low risk.

The very first essential of any test method is reliability. Otherwise, it is impossible to estimate either its precision or accuracy. Mathematical statisticians and quality control engineers not only have defined reliability, precision and accuracy, they also have provided techniques for actually determining whether or not a test method is reliable and for estimating its precision and accuracy. The cement industry so far has not availed itself of these techniques. We have no indisputable statistical evidence that any of our standard test methods are reliable or in statistical control; that is, we do not know with certainty that the directions and specifications for performing the various standard tests are fully adequate to eliminate all known causes of variation. Until we do know this, it is futile to try to estimate precision or accuracy.

It does not seem probable that uniformity of portland cement ever will be appreciably improved until the industry and consumers of cement are willing to make radical changes in specification requirements and to re-examine all of the standard test methods now in use. It is imperative that we examine test methods because, as I said before, a rational and impartial specification cannot be written unless we have definite, specific information about our test methods.

A program for a rigorous examination of all standard test methods should incorporate all the modern statistical concepts and techniques. All half-way or short-cut expedients should be excluded; a particular fault to be avoided is requiring too few test samples. Needless to say, such a plan should be drawn up with the aid of qualified statisticians and quality control engineers. It should not be left entirely to chemists, engineers and technicians who are unfamiliar with these subjects.

A great deal can and should be done to improve the present test methods and specifications for portland cement. By making use of modern statistical concepts and techniques, we will remove some obvious weaknesses and deficiencies of which the whole industry is aware. END

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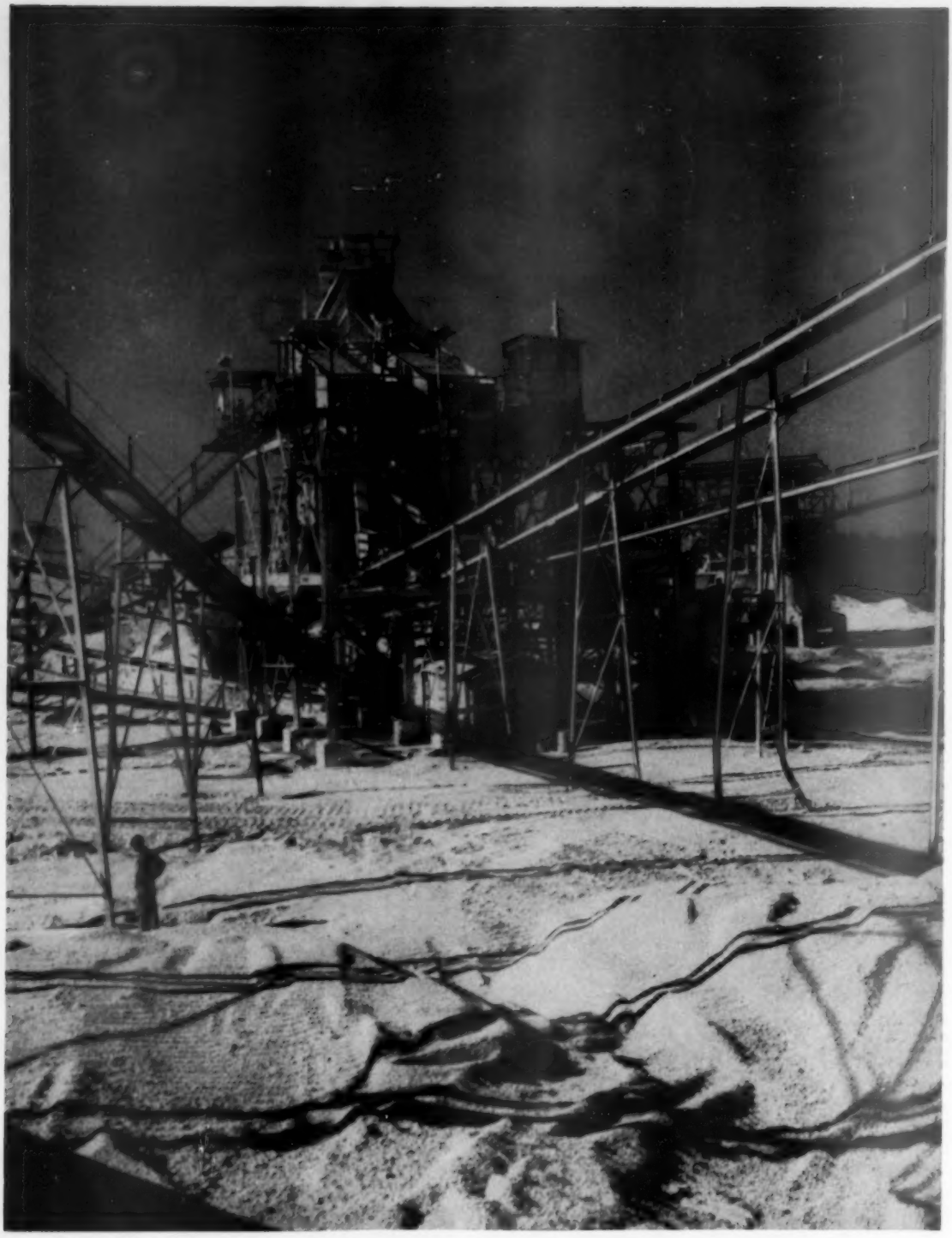


THE STORAGE BOTTLENECK is gone, broken by these high-capacity vibrating screens and conveyors

CAMP ZEROES IN ON PRODUCTION TARGETS

by Elwood Meschter

PRODUCERS WHO BETTER THEIR OWN production records year after year sometimes come to the end of the line—a "production barrier" which limits the output of existing equipment. This might have happened at the Brooksville, Fla., plant of Camp Concrete Rock Co. if its ambitious managers had not seen the situation developing. Clarence Camp, II, president, and J. V. Simmons, vice president and general manager, were determined to maintain the steady growth of the plant which started 25 years ago as a one-man operation and grew to a 250-man enterprise.

Even with peak production from an installation that is pouring out more than 1½ million tons of limestone a year, Mr. Camp has set his sights on more production. And Clarence Camp, holder of several skeet shooting records, is an expert marksman in his own right. Industrial targets are zeroed-in with the same firing-range precision.

This precision and study has already racked up bulls-eyes for the organization in its expansion of markets all over the state of Florida and into nearby states. The plant's reservation has been expanded to nearly 10,000 acres; a full-time prospecting crew is blocking out its deposit of "crystalline" limestone.

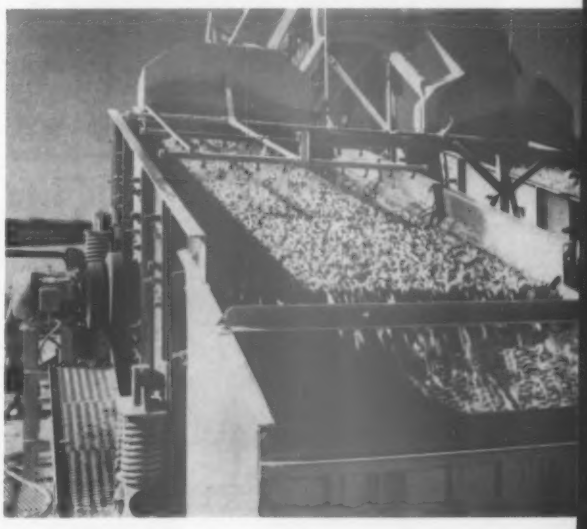
Next target is a master plan for replacing or rearranging the equipment. The changes will be made step by step without interrupting the torrent of limestone being prepared and shipped from the plant. These innovations are as radical today as the existing plant was only a few years ago. (See ROCK PRODUCTS, August 1955, p. 140.) First parts of the master plan include: new screening plant and storage system; elimination of a raw materials surge pile, and new reclaim and truck-loading system.

Four huge vibrating screens are housed in a structural steel tower. These are 7 x 16-ft., three-deck units—among the largest ever made in this country. The flow of material is split between the top two screens arranged in pairs, one set above the other. They easily handle the stone now processed by the existing washing and crushing equipment and delivered to the top of the screen tower at 1,300 tph.

This new system starts at the end of the old plant. Here a final crusher normally set at 1-in. delivers washed stone to a new inclined belt conveyor for the trip to the top of the 50-ft. structural steel tower where a bifurcated chute divides the flow of material between the vibrating screens.

Please turn page

THE TWO TOP SCREENS can each handle 800 tph. of crushed limestone



CAMP ZEROES IN

The top decks of these screens are fitted with a battery of spray nozzles as an aid to better screening efficiency when handling large volumes of fine stone. With three screen surfaces on each screen, a wide variety of sizes can be produced to meet varying specifications. However, there are only five storage piles, and blending may be necessary to take some size requirements from inventory.

Oversize from the top decks is collected by a cross conveyor. This unit delivers the stone to a small horizontal vibrating screen which strips out fines or near-size material. Over-screen stone drops to a small double-roll crusher, and crushed limestone is taken to the main conveyor to be returned to the top of the screen tower.

Two finished products are made on the two upper vibrating screens. These coarse aggregates are taken to storage on long inclined belt conveyors which reach nearly 100 ft. into the storage area.

A HIGH-PRODUCTION QUARRY can put limestone in the system at rates exceeding 650 tph.

FINES are taken out of the system at a primary washing station. Material goes from here to the washing plant in a single 7,000-ft. jump

THE OLD SURGE PILE is gone—bridged by the trestle carrying a single 7,000-ft.-long belt conveyor

Three finished products are normally made on the two lower screens that take the through-screen materials from the high screens. These three fine aggregates are sent to storage on belt conveyors fanning out from the screen tower. The coarsest size is stacked in line with the two products from the top screens above a reclaim tunnel leading to a rail and truck-loading area. The fine aggregates are stacked over another reclaim tunnel. These reclaim tunnels are the first part of the new truck-loading system.

The raw material for these big vibrating screens has already been thoroughly scrubbed and rinsed several times before it reaches the screens. As a result, the sands which are sluiced through the lower screens are particularly fine and free from impurities. Wash water is pumped from the screen tower to a Camp-designed, sand preparation system. This is an old system. It will be retained as long as it can efficiently handle the volume of sand from the screening setup.

During the first few months of operation the new screening and storage equipment has proven to be far more effective than the equipment it replaced. Before this, limestone from the final washing section was taken to a battery of six vibrating screens. These were mounted above a group of 30-ton concrete silos. There was no storage capacity in these bunkers, for they were merely surge hoppers for the skip cars taking material to storage.

One skip car handled each of the six sizes of stone held in the storage bin. Each car, mounted on a narrow-gauge track, would haul a 5-ton load to the end of the trestle, dump it and return to loading position under the bin. This was a slow and tedious process. Not only was the car running empty for part of its cycle, but it was impossible to speed up the cycle. Excessive power demand per ton of material, rocketing maintenance expenses and unsafe operation doomed the skip-car system.

Another target for improvement was the flow of material from the quarries to the washing and screening plant. That involved a careful study of the existing conveyor system, a two-section setup with a surge pile at the midway point. Camp Concrete had been one of the first rock products producers to visualize the economies of cross-country belt-conveyor transportation. When the company spotted the processing plant near a highway and rail spur and sent raw limestone more than a mile from the quarry via belt conveyor, it was a bold move. In those days 1,000 ft. was a long haul for a belt.

The original conveyor system was made in two sections, each about 4,000-ft. centers. The first section was uphill all the way and discharged into an 8,000-ton surge pile at about 350 tph. A second flight could handle better than 400 tph. from the surge pile to the processing plant.

The surge pile has been eliminated. Where it stood, a structural-steel trestle now supports a belt conveyor which brings the stone in a direct line from the quarry. The study showed that the surge pile was seldom operated independently of the quarry. Since the additional equipment was excess baggage, it was dispensed with. Now a single-belt conveyor runs nearly 7,000 ft. from a primary washing station to the plant.

With greater production planned for the washing and screening sections, the quarry must be able to keep up its production. It is well tooled to do so. The quarry day shift has two electric shovels, each with 2½-cu. yd. buckets. It takes ten 25-cu. yd. trucks and two 27-cu. yd. trucks to keep up with them.

Washing starts at the truck-dump hopper where a high-pressure nozzle is at the ready to sluice any sticky material through the throat. Two trucks at a time dump quarry-run material to a wobbler feeder below the hopper. This unit scalps off oversize for a jaw crusher and then all material meets again to be scrubbed in an octagonal-screen drum washer. Tailings from this unit are sent to a pond to be discarded.

Fines are taken out of the material almost immediately. Washed stone travels uphill on a belt conveyor about 1,000 ft. to a primary fines-removal station. Sprays above a vibrating screen rinse the coarse rock to remove small sizes. Through-screen material and wash water are pumped to a sand-preparation unit to make two sizes of fine limestone. These sizes are stored while the coarse material continues on the long belt conveyor to the plant. These first two washing stations use much of the 14,000 gpm. of wash water consumed in this plant.

There is plenty of opportunity for improvements in the screening and washing plant. But with these jobs completed and the truck-loading system underway, it will probably not be long before the rest of the master plan takes shape.

The four vibrating screens were supplied by Allis-Chalmers Mfg. Co., and the system was built to their design. Most of the belts were made by Goodyear Tire and Rubber Co., and almost all of the belt conveyor idlers are by Hewitt-Robins Inc.

The Daily Western Star ★FINAL
VOLUME CXVI - NO 230
MONDAY OCTOBER 12, 1959
PRICE - 10 CENTS
MOTION QUASHED TO CLOSE QUARRY
COURT BACKS ROCK FIRM IN ZONING DISPUTE
Court okays rock crushing plant
Quarry operation justifed by community need
Quash attempt to close quarry in court hearing
JUDGE REJECTS RESIDENT'S MOVE TO CLOSE QUARRY

Quarry operators *DO* win cases

by Albert W. Gray

QUARRYMEN, TAKE HEART. You don't fight a losing battle in suits threatening to "outlaw" your business. Communities that try to legislate you out of existence quite often find that the winning arguments are on your side.

Newspaper files across the country could divulge a voluminous history of the case, Complaining Neighbors v. Quarry Operation. They also can provide evidence that an encouraging number of judgments are favorable to the latter. Here are a few recent examples that I think are noteworthy:

Monterey Park, Calif., enacted an ordinance compelling the discontinuance of the quarrying of decomposed granite by McCaslin Materials Co. In effect, the judge said that the community had no right to enact such a law. His decision was based on a statement by the U. S. Supreme Court on the rights of such lawmaking bodies as legislatures and municipalities.

"The legislature," ruled the court, "may not under the guise of protecting the public interests

Please turn to page 122

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WHAT YOU WILL FIND WHEN YOU COMPARE HAULPAK:

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WHAT TO COMPARE	Off-road Haulers 20-30-ton class		Off-road Haulers 30-40-ton class		HOW YOU BENEFIT
	Average*	Haulpak LW 27	Average*	Haulpak LW 32	
Length Wheelbase Turn Diameter	26'7" 14'4" 64'3"	23'10" 10'10" 44'6"	31'5" 16'7" 77'6"	23'10" 10'10" 44'6"	HAULPAK is shorter. You maneuver faster, quicker and in less space.
Top Speed (in mph)	30.7	35.4	25.2	38.8	HAULPAK is faster, for more cycles per hour, more tonnage per shift.
Empty Weight (in lb)	49,300	43,020	73,400	44,950	HAULPAK is lighter, for more payload weight, less "dead" weight.
Ground Clearance Front Axle Rear Axle	 18" 16"	 25" 20"	 17¼" 18½"	 25" 20"	HAULPAK has higher clearance, to minimize troublesome "dozing" action.
Brake Surface (sq inches)	1511	4680	1834	5148	HAULPAK has bigger brakes, for greater safety, more steady use of high speeds.

(*Based on specifications available at time of printing)

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QUARRY OPERATORS DO WIN CASES, *continued from p. 120*

Albert Woodruff Gray is a lawyer as well as a writer. A resident of Forest Hills, N.Y., he was graduated from Yale College and New York Law School. He has spent 20 years in independent practice of law, 4 years as legal watchdog for Young & Rubicam Advertising Agency and 4 years as editorial writer for Prentice-Hall Inc. He now writes free-lance articles for several business publications.

arbitrarily interfere with private business or impose unusual and unnecessary restrictions upon lawful occupations."

Calling the business of excavating rock and gravel "a lawful and useful occupation," the judge in the Monterey Park case decreed, "The operation of a quarry is not a nuisance in itself."

Another California case concerned an injunction against the continued operation of a stone quarry on the grounds that the conduct of the business was a nuisance. Residents of the neighborhood insisted there was an excessive and unnecessary amount of noise and dust; besides, trucks to and from the quarry added traffic hazards.

It also was charged that this quarry had been operated with little, if any, consideration for those living in the neighborhood. Frequently blasting and similar activities had been continued on Sundays, beginning in the early hours of the morning. On one occasion, it was alleged, a tire truck had been permitted to roll down a hill, crash into a home and narrowly miss a small child at play.

These are serious charges, but the judge questioned the validity of closing down the entire operation. "There is a vast difference," he declared, "between regulating the methods of operation of a lawful business by injunction or ordinance and in completely prohibiting the carrying on of such business."

The judge described quarry property as "one-use" property, conceding, "The rock must be quarried at the site where it exists or not at all. An absolute prohibition, therefore, practically amounts to a taking of the property since it denies the owner the right to engage in the only business for which the land is fitted.

"While under the police power such complete prohibition against operating the property can be decreed, it can only be justified where irreparable injury to others necessarily results and the condition cannot be rectified except by complete prohibition," he continued.

"Whether the attempt to regulate be by ordinance or by injunction," the court advised, "the approach must be reasonable. The law is well settled to the effect that when the business is not a nuisance in itself an injunction should be limited in scope so as not to injure the entire business if a less measure of restraint will afford the relief."

Californians witnessed another controversy a few months later. This time, the quarry was in the mountains, a thousand feet from the nearest dwelling. The court turned down an application for an injunction by residents of the area. In its denial, it restated the law that seeks to apportion fairly the conflicting rights and the forbearance demanded in such situations of quarry and home owners.

"We must bear in mind," admonished the court, "that in determining whether a present or proposed use of property is a nuisance, many factors must be considered. The law relating to private nuisances is one of degree. A use that would be reasonable under one set of facts might not be reasonable under another."

Another argument that protects the rights of the quarry owner derives from previous circumstances. In New Jersey a few years ago, it was shown that protesting residents had purchased their properties 15 years after the establishment of the quarry operations; then they delayed another 15 years in taking legal action against the quarry as a "nuisance."

Deciding for the quarry owners, the judge balanced the "irreparable injury" such an injunction would cause them against the claimed inconvenience and loss suffered by the residents. He admitted that the residents had a right to an injunction against any acts destructive of their property rights. However, he concluded, "The long delay serves to outweigh the present claim of threatened irreparable loss."

You may say that these are isolated instances, and they are. It also is true that they are qualified successes because, in cases of this kind, you lose even when you win. Suits are costly; even more costly are efforts to regain ground lost in community respect and support.

It would be better, instead of congratulating

Please turn to page 142

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Improved impactor has licked the abrasion problem common in crushing lightweight aggregates

IMPELLER of the D'Centegrator, 10 in. in height and 32 in. diam., has cup-shaped shoes which are the key to its success

Design breakthru clips crushing cost

by Kneeland A. Godfrey, Jr.

ABRASIVE WEAR HAS BEEN LICKED as a costly problem in crushing expanded shale and clay aggregates by a new impactor. Crushing costs have been drastically reduced through the ingenious redesign of the crusher, called the D'Centegrator. Capacities range from 40 to 150 tph.

This pretty well removes one of the major obstacles facing producers of expanded clay and shale aggregates—how to get the fines needed for the popular concrete block mixes at reasonable cost.

As one of the most abrasive of all rock products, expanded shale and clay were not so costly when sold in the larger sizes, for crushing was not necessary. Many producers feel that block made with the larger aggregates have more interesting, textured surfaces. But, for one reason or another, most users of block like the fine-aggregate mixes. Crushing to make fines in sufficient quantities was a very costly operation. So much so that expanded clay and shale producers found it difficult to compete price-wise with producers of other lightweight materials.

The need was recognized: to produce fines in volume at low cost, producers had to minimize time-consuming hardfacing or replacement of crusher wearing parts. And the way was found—by Simplicity Engineering Co. and Melvin Cruzen, manager of Light Weight Aggregates Corp., Li-

Please turn page

FEED drops into the D'Centegrator at 150 tph., is reduced from minus 1½ in. to minus ⅜ in.

DESIGN BREAKTHRU CLIPS CRUSHING COST, *continued from p. 125*

vonia, Mich. They redesigned the crushing blades so that incoming feed rubs on a hard cake of expanded clay, not directly on the steel parts of the crusher. This is how it happened:

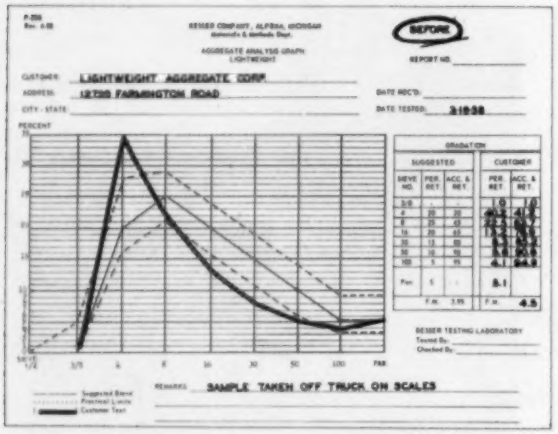
A while back Mr. Cruzen and a Simplicity representative were talking about the abrasion problem. Would Simplicity's old model (introduced in 1932) solve it? Light Weight Aggregates was using a roll crusher for secondary reduction. But its rolls wore down so fast that adjustments were a constant bother. And frequent rebuilding of the rolls took time and money.

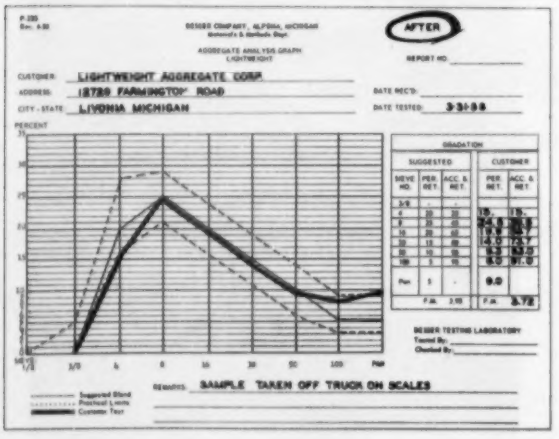
Well, the old D'Centegrator did the job, all right. But it lasted just four hours before the rotating impeller bars were almost completely worn away! Hardfacing certainly would have prolonged life considerably, but not enough to cut unit costs to the desired level.

Then the idea of adding a piece of steel bar to the impeller blades to make them cup-shaped was hit upon. This might permit some incoming feed to catch in the bucket and thus protect the abrasion-prone steel parts. That's just what happened. So effective is the redesigned D'Centegrator that Mr. Cruzen reports almost no maintenance is needed. Replaceable tips have been fashioned to fit over the exposed tips of the impeller bars. With hardfacing, they last quite well. But even when replacement is needed, the tips are quickly slipped off and a new set put in place.

Furthering the same idea, the impactor was redesigned to have an indented shell surface. Now, incoming feed packs against this, too, and gives the shell liners indefinite life.

BEFORE & AFTER GRAPHS of size gradations of Light Weight Aggregate's Bealite product show the outstanding job the D'Centegrator does



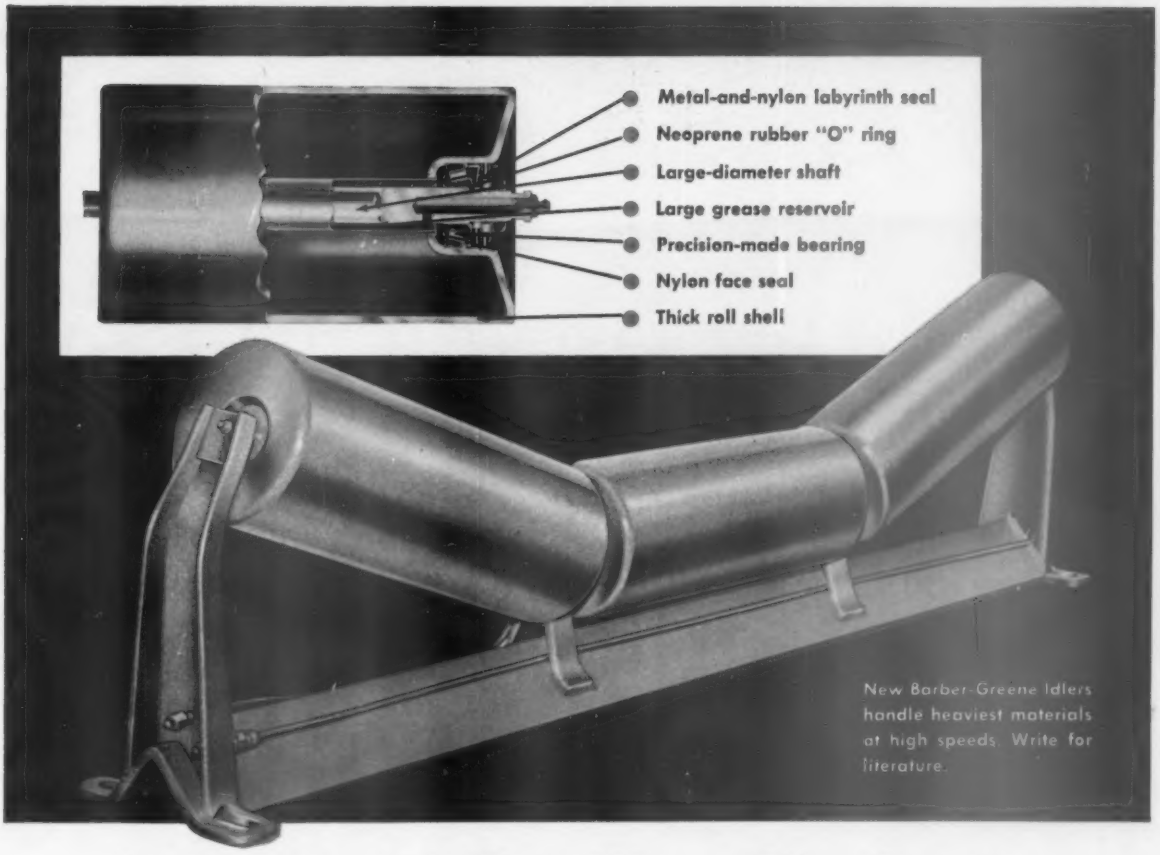


How can this setup work? For one thing, the feed is now so tightly packed in the impeller and shell that a man with a pick would have trouble removing it! Second, the impeller is whirling at a rapid 1,100 rpm., fast enough to give plenty of impact speed to the feed.

Result: Even though working with a vexatiously abrasive material, the D'Centegrator has effective life of 200,000 tons and more, with no major replacements. As a bonus, thanks to its redesign, it catches pesky tramp iron in the packed feed, eliminating a troublesome maintenance headache.

Light Weight Aggregates uses a primary roll crusher set at 4 in., chiefly to protect the elevators from plugging. Crusher discharge goes by a belt and two elevators to two 5 x 12-ft. screens on top of three silos. The plus ¼-in. product goes to one silo and the finished product to the others. When the "oversize" silo is full, the D'Centegrator is started up and fed at the maximum rate the belts will carry, or around 150 tph. The D'Centegrator product goes back to the two screens so that the plus ¼-in. material is in closed circuit with the D'Centegrator. More fines can be produced by speeding up the crusher, which normally runs at 890 rpm. It is powered with a 100 hp., 1,200 rpm. motor.

Simplicity is working with producers of other kinds of rock products, assessing the D'Centegrator's suitability for their varied needs. A number of producers of agricultural lime, crushed stone, sand and gravel and even iron ore are trying the unit. END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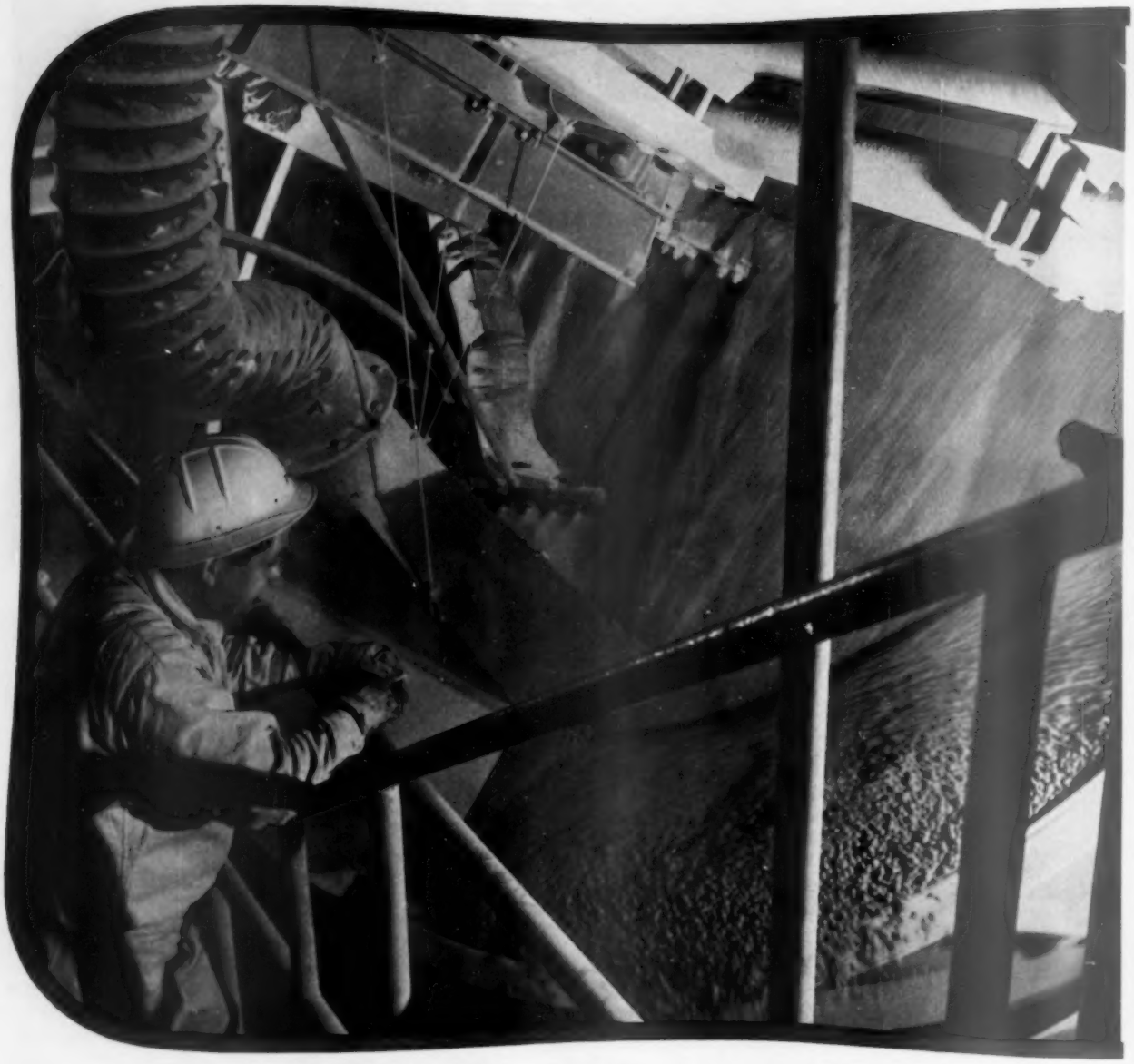

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"COORDINEERED" Allis-Chalmers Equipment Paves Way to Increased Capacity at Diamond Portland Cement Co.

Progressive — that's Diamond Cement at Middle Branch, Ohio. Modernization — $5,000,000 worth — has meant an additional million barrels of *low-cost* production for this relatively small, but aggressively on-the-grow operation.

Significantly, Allis-Chalmers supplied much of the major equipment in this modernized plant. Wheel horse in the operation is a complete *ACL* kiln system — pelletizer to clinker cooler. Other Allis-Chalmers equipment includes two vibrating screens and a pair of 1000-hp ball mills. Associated electrical equipment was also supplied by Allis-Chalmers.

"Heads-Together" Approach to Application

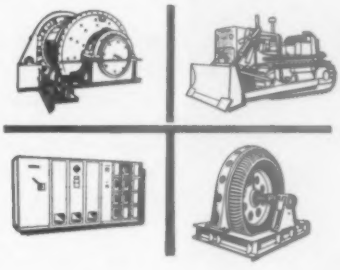
Allis-Chalmers manufactures a most diversified line of processing and electrical equipment. Each product department is staffed with research, design, manufacturing and application specialists. "Coordineering" results from an interdepartment exchange of ideas and the correlation of specific skills. Integration of thinking, planning and engineering precedes integration of equipment.

Help for You or Your Consultants

Arrange a meeting with your A-C cement team. See your local representative or write Allis-Chalmers, Industrial Equipment Division, Milwaukee 1, Wisconsin. In Canada, write Canadian Allis-Chalmers Ltd., Box 37, Montreal, Quebec.

Allis-Chalmers Products for Cement Industry

Earth-Moving Equipment
Kilns Grinding Mills Crushers
Vibrating Screens
Dryer-Coolers Motors Control
Switchgear
Unit Substation Steam Turbines



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ACL is an Allis-Chalmers trademark.

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The industrial minerals field offers new challenges

A new era for mining engineers?

"People are throwing away a fortune in worked-out underground limestone mines simply because they don't recognize their value."

Russell W. Hunt
Southwest Lime Co.

"Expansion (of shales, clays and slates) is now a science, instead of an art."

Joseph J. Shideler
Portland Cement Assoc.

"The gypsum industry is in a state of expansion. One impetus to this expansion is the increasing demand for gypsum board . . ."

Richard A. Teichman, Jr.
Pennsylvania Railroad

THE ROLE OF THE MINING ENGINEER in the industrial minerals industry is changing rapidly—to one that will offer pressing challenges in the immediate future. He'll have to go underground to exploit limestone reserves, then convert the excavations to huge, strategic storage and factory areas. He'll be continuously experimenting with new types of construction materials and researching and designing methods to produce them. Probably at no time has the mining engineer in the rock products industries faced a more challenging future.

Glimpses of that future were caught at the joint meeting of the Coal and Industrial Minerals Divisions of the Society of Mining Engineers. The two divisions of this branch of American Institute of Mining, Metallurgical, and Petroleum Engineers, Inc., convened September 24-26 at Bedford Springs, Pa.

Two men chairmanned the technical program: Leon W. Dupuy of U. S. Bureau of Mines, for the Industrial Minerals Division, and H. E. Mauck of Freeman Coal Mining Corp., for the Coal Division. The two groups met separately the first day and jointly the second day. On the third day, field trips to the Aschom plant of New Enterprise Stone & Lime Co. and to the Tatesville plant of Pittsburgh Silica Sand Co. were scheduled.

People are throwing away a fortune in worked-

Please turn to page 132

Allis-Chalmers tackled this motor problem "cold"

Even heavy icing couldn't freeze this motor. An Allis-Chalmers customer required that this open-type *Super-Seal* motor (with *Poxeal* insulation) start even though embedded in ice.

The successful tests were conducted in the A-C Motor Laboratories where customers' motor needs point the way to continuous development programs.

Research, combined with testing of this type, has established Allis-Chalmers as a pioneer-leader in the motor industry. It has led to the most complete line of integral-horsepower motors; it has led to wide acceptance of such A-C developments as *Synduction* and tube-type motors, and now *Super-Seal* motors.

Cement and other non-metallic industries can profit from this pioneer-leadership. *Contact your A-C representative or distributor, or write Allis-Chalmers, General Products Division, Milwaukee 1, Wisconsin.*

Poxeal, Synduction and Super-Seal are Allis-Chalmers trademarks.

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out underground limestone mines simply because they don't recognize their value. So says Russell W. Hunt, president of Southwest Lime Co., Neosho, Mo. He told how his company has completed a two-year reconstruction job in an underground mine, providing 600,000 sq. ft. of lighted storage area. Both temperature and humidity are closely controlled.

In the future—the 60's and 70's—Mr. Hunt estimates that there will be a need for 2 billion sq. ft. of underground factory and storage areas to be used as protection against possible nuclear bombing and fall-out. This may mean shifting 30 to 50 percent of strategic manufacturing operations from the surface to underground.

The government probably should go into the mining business to get the needed area, suggests the Missouri lime producer. Sweden has; she currently is spending $1.15 per capita each year for such work. On the same basis, the U. S. could spend $200 million annually. It is a small price when compared with the $40 billion spent annually on "offensive defense," as Mr. Hunt describes it.

Also, as much as 40 percent of the cost may be borne by business concerns who may lease the underground space for various commercial operations or materials storage.

Lightweight aggregates are quickly entering the structural market. Joseph J. Shideler, Portland Cement Association, was the speaker who remarked, "Expansion (of shales, clays and slates) is now a science, instead of an art." Recent engineering investigations, he pointed out, have shown how the expansion mechanism goes forward. There are two requisites in forming expanded aggregates from these materials: (1) the material, when heated, must come to a fused state; (2) when heated, gas must be formed to cause the expansion. He briefly discussed the rotary kiln and sintering processes, now commonly used in manufacture of lightweight aggregates.

Cement consumption for expanded-aggregate concrete ranges from 5 to 8 sacks per cu. yd., compared to around 4 for sand-and-gravel concrete. But some materials may be used to make lightweight concrete with as few as 4 sacks. It is possible, said Mr. Shideler, to produce strengths of lightweight concrete up to 8,000 psi.

Weight of the light material is about 90 to 100 lb. per cu. ft., compared with 150 lb. per cu. ft. for sand-and-gravel concrete. Most properties, he said, are comparable with concrete made with regular aggregates. Use of the material in the future looks promising, since prestressing units have been made that provide the required high strengths in a short time.

The use of limestone in curtain wall construction is new. Now it is possible to get curtain wall sections made of 2-in. limestone, with insulation installed at the factory. Jasper D. Ward, architectural consultant for Indiana Limestone Co., explained the manufacture and use of such units, primarily of dimension stone. But, he explained, "Architects do not recognize the value and importance of the use of limestone, mainly because they are not acquainted with the product, its qualities and potentials in use."

The engineer has made available this new use for limestone, and now there's a need to educate possible users with its value in construction. Its cost, according to Mr. Ward, assuming Indiana limestone is used, is about $4 a sq. ft. installed as far east as Buffalo, N.Y. That compares with $2 a sq. ft. for clear glass.

The marked defect of the dimension stone industry—one that has cost it sales—is indifference to customers' wishes. This statement was made by W. F. Mullen of the Pennsylvania Slate Producers Guild, Inc., who discussed "Competition of artificial dimension stone." The market for dimension stone was lost by default, he said, because architects' requests for help fell on deaf ears. So, in their search for variety, color and lower costs, the architects turned to the competitive artificial stone industries, as Mr. Mullen called them.

The "artificial stone" industries met the challenge—met it well. Many manufacturers found ways to duplicate qualities of dimension stone and, in some cases, to build in more desirable qualities. Even so, the dimension stone industry did not combat the new competition; it didn't think a manufactured product could be made to compete.

What can be done by the dimension stone industry now, to recover lost ground? According to Mr. Mullen, it should advertise, exhibit at trade shows and reslant promotional literature to improve sales. It should get progressive young men to contact architects, particularly at project planning stages. In short, said Mr. Mullen, the industry "should apply more tact with the architect; do it the way the other fellow would have it done."

The gypsum industry is in a state of expansion. Gross sales have been rising consistently since 1941. One impetus to this expansion, say Richard

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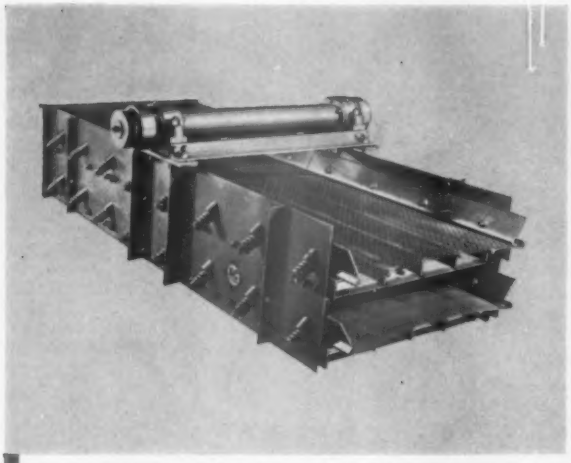
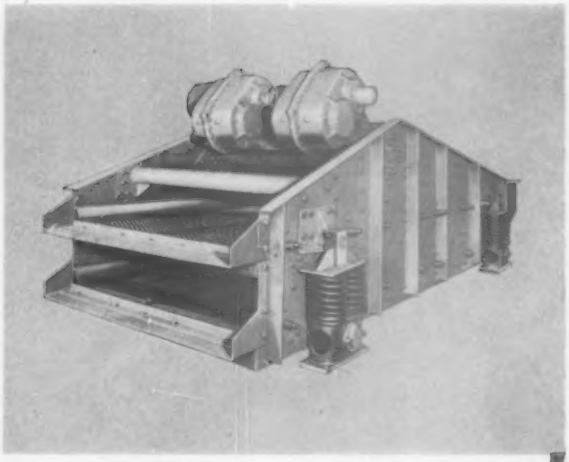


For moderate to fine sizing — wet or dry. AVS *Aero-Vibe* inclined screen: Available with wire cloth or perforated plate surfaces. Maximum aperture — 1½ inches. 1, 2 or 3 decks. Sizes 3 by 6 to 5 by 10 feet.



For coarse to fine sizing — wet or dry, rinsing, or media recovery. *Low-Head* horizontal screen: Saves headroom. Wire cloth or perforated plate. Apertures to 2½ inches. 1, 2 or 3 decks. Sizes 3 by 6 to 8 by 20 feet.

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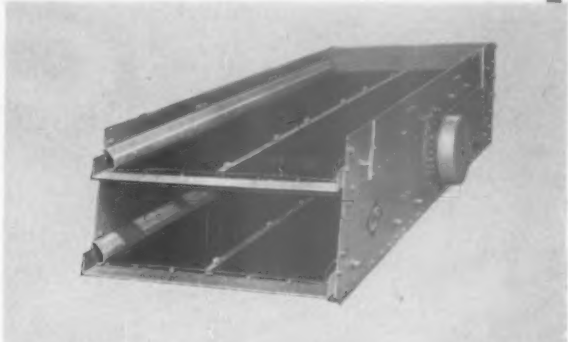
Easy to choose: A helpful screen selection guide has been prepared to help you pick the right model screen for your process. *Contact your Allis-Chalmers representative or write for Bulletin 25B6280. Allis-Chalmers, Industrial Equipment Division, Milwaukee 1, Wisconsin. In Canada write Canadian Allis-Chalmers Ltd., Box 37, Montreal, Quebec.*

For scalping and coarse sizing — wet or dry. XH *Ripl-Flo* inclined screen: Wire cloth, perforated plate, rod or stepped grizzly-bar surfaces. Apertures to 10 inches. 1, 2 or 3 decks. Sizes 4 by 8 to 8 by 14 feet.



For light scalping, coarse to fine sizing — wet or dry, and for rinsing. SH *Ripl-Flo* inclined screen: Wire cloth or perforated plate. Apertures to 5 inches. 1, 2 or 3 decks. Sizes 3 by 6 to 8 by 20 feet.

Aero-Vibe, Low-Head and *Ripl-Flo* are Allis-Chalmers trademarks.

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WONDERWALL, West Virginia's new multiwall bag made with Kraftsman Clupak paper, is inspected by industry leader Robert S. Gerstell, President, Alpha Portland Cement Company, Easton, Pa. "This isn't the first time we've introduced revolutionary advances for the sake of better operations in our plants . . . and for our ultimate customers," Mr. Gerstell states.

....ALPHA CEMENT changed to multiwalls of West Virginia's Clupak* Paper

When the new tougher Kraftsman Clupak paper was being introduced by West Virginia Pulp and Paper Co., the Alpha Portland Cement Co., Easton, Pa., major producer of Portland and mortar cements, did its own testing.

This was only natural for a leading company in the industry—with eight plants in the East, Midwest and South. Alpha's president, Robert S. Gerstell, foresaw the tremendous possibilities of Kraftsman Clupak paper, especially in terms of customer satisfaction and operating economy. With his guidance, Alpha was the first major cement company fully to realize the potentials of this new West Virginia paper!

Alpha's purchasing agent, James I. Maguire, directed the test program which compared Alpha's then current, natural kraft multiwalls with bags made of the new Kraftsman Clupak, the paper with built-in stretch.

Filling, handling and shipping were all examined. On every count, the new Kraftsman Clupak paper bag proved its superior toughness!

Construction of the natural kraft bags, to carry 94# of Portland cement, was 2/40, 2/50 totalling 180# paper basis weight. The new Kraftsman Clupak bags were 1/50, 1/50, 1/50 totalling 150# paper basis weight. Savings on the paper basis weight reduction of 30# amounted to $2.75 per M bags.

But more important—bag breakage in shipments of both Portland and mortar cement has become negligible! And complaints from supply dealers have been reduced to a minimum.

Today, virtually all multiwalls used by Alpha, from whatever supplier, are made of Kraftsman Clupak paper. And naturally, Alpha is using West Virginia's own bag, called WONDERWALL.

If you pack fertilizer, feed, cement, flour, chemicals or like products, see how you can *cut costs* and satisfy customers *better* with WONDERWALL. Write Multiwall Bag Division, West Virginia Pulp and Paper Company, 230 Park Avenue, New York 17, N. Y.

West Virginia Pulp and Paper

**Clupak, Inc.'s trademark for extensible paper manufactured under its authority.*

TEST MASTER. James I. Maguire, purchasing agent of Alpha Portland Cement Company, says: "The success of bags made from Kraftsman Clupak paper, due to sheer toughness, was extraordinary from the start. They are not only tougher . . . they make possible realistic savings in bag costs."

WONDERWALL PROVING GROUND #1. Actual handling of WONDERWALLS and other bags made with Kraftsman Clupak paper—in comparison with the old, natural kraft multiwalls—proves the superiority of Kraftsman Clupak paper. No problems with filling, opening, stacking or shipping.

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ROCKY'S NOTES, *continued from p. 21*

good at that; his partner had never learned, or acquired enough skill, to saw a board off square. We mixed our own concrete on a mixing board with shovels and hoes. And we managed to get the slabs in and out of the hydraulic testing machine. So, we did get an education in actual making and placing concrete that few engineering students had received up to our time—or probably since that time. Who knows? It may have left subconscious ideas about cement and concrete!

The only textbook in English at that time on the subject of concrete was "Concrete, Plain and Reinforced," by Taylor and Thompson, first edition, published in 1905. The Thompson was Sanford E. Thompson, whom many present members of the American Society for Testing Materials will recall. Referring back to that historic volume, we find some interesting contrasts to the present status of cement and concrete. As a structural material, reinforced concrete was strictly in an experimental stage. The annual production of portland cement was about 10,000,000 bbl.

There was considerable discussion as to the relative economy of mixing by hand or by machine mixers. The wage rate for common labor then was $1.50 a 10-hr. day. While clean aggregates were generally recommended, it was admitted that "clay and loam in sand is apt to weaken rich mortars and strengthen lean mortars." Natural cements were competitive with portland cements for most purposes but were, in general, of less reliable quality. The proportioning was usually by specified parts, such 1:2:4 or 1:3:6. The main problem was how to insure the proper amount of cement.

One method of doing this, although not recommended by Taylor and Thompson, was to determine the voids in the mixed aggregate by the volume of water required to fill them. This was a simple field operation that this writer had already had some experience with. While still an undergraduate he had a job one summer as a "concrete inspector" on construction of an interurban electric railway. The concrete inspector's job was to see that the contractor did not cheat on the cement, which cost in the neighborhood of $4.00 a barrel. The method was as simple as ABC:

Using an ordinary pail (the workmen's drinking bucket) and a dipper (the drinking cup), the concrete inspector determined the number of dippersfull of water to fill the empty pail. He then dumped out the water and filled the pail with the mixture of aggregates to be used, making sure that the aggregate was fairly well consolidated. He next counted the number of dippersfull of water to bring the water flush to the top of the pail. This number divided by the dippersfull required to fill the empty pail was the percentage of voids to be filled with cement. The moisture already in the aggregates was of course overlooked.

In this case the aggregates, as usual on small jobs, were unscreened, unwashed sand and gravel containing all the sand and fines as it came from a nearby pit. It so happened that in this instance, for the construction of a pair of bridge abutments, the so-called bank gravel was nearly all sand so that the cement requirement was high—nearer a mortar mix than concrete, causing a continual conflict between the contractor's foreman and the concrete inspector. Incidentally, the Italian foreman subsequently became a prominent New England contractor. He must have learned something about concrete as well as the concrete inspector. Nevertheless, those "concrete" bridge abutments were still there, in excellent condition long after the railway was abandoned. They are probably still there—proving Taylor and Thompson's axiom that if you want good concrete, use plenty of cement.

After graduation, Marston's and this writer's careers departed widely. Since then, Marston has probably designed and supervised construction of several million cubic yards of concrete structures, while his thesis partner has probably written and published as many million words about cement, concrete aggregates and concrete. Both still retain a vivid recollection of their first intimate acquaintance with concrete, plain and reinforced.

PERCENTAGE DEPLETION, *from p. 95*

Here are some other pertinent congressional comments made to me on this matter:

"We never intended to give percentage depletion on a manufactured product. The purpose of percentage depletion was to encourage mining exploration—not manufacturing. This thing is now threatening to get out of hand."

"The extreme demands of the representatives of the salt industry at the hearings hurt all industries. These people have no more call than do the Treasury spokesmen to tell the men who wrote the law what they meant by it."

"We've almost reached the point where instead of spelling out items that get percentage depletion, we'll be spelling out those that don't."

"Naturally a majority of the rock industry producers are going to oppose this bill because it takes money out of their pocket. Treasury is pushing it for the same reason. We have to decide who's right and who's wrong."

"For the first time, we now have a situation of comparative stability in the field of depletion. I think we might advisedly retain something that gives us an element of certainty rather than adopt

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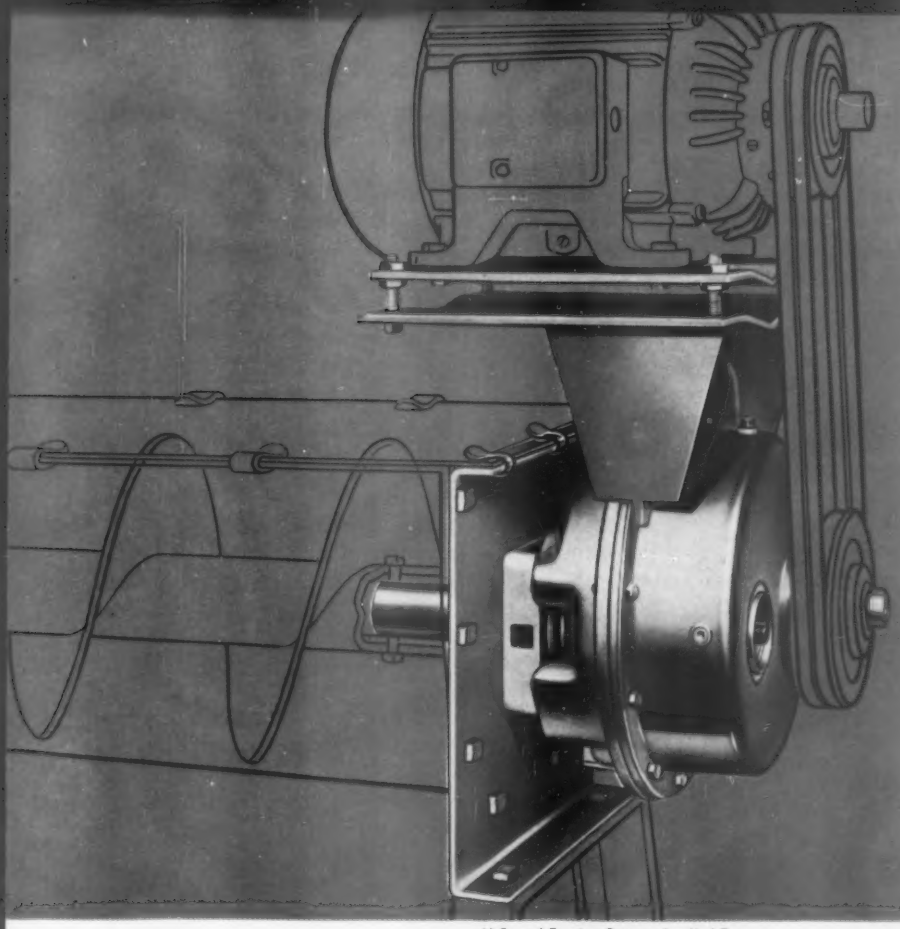

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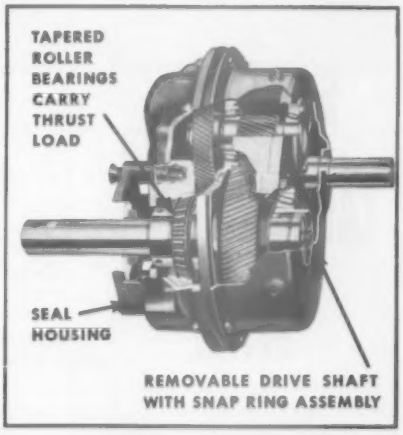

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PERCENTAGE DEPLETION, *from p. 136*

the terrific uncertainty that we would find from the approval of a new approach to this question."

While Congress decides whether or not it is going to take action, what happens in the meantime?

A Treasury lawyer told me: "We'll not press suits any longer in those areas where it is clear that the first marketable product is the finished product. That includes following the Dragon Cement verdict for the moment. In the meantime, we expect that producers will continue to try to take the maximum percentage depletion possible. I don't blame them. What would you do?"

So what's ahead for rock producers? Congress isn't anxious to handle this hot potato, but the general tenor of the Ways and Means Committee probably leans slightly toward the industrial viewpoint. Chances are, if any change is made at all, it will probably fall short of the revisions sought by Treasury.

For its part, Treasury shows no inclination—in spite of its friendly words—to soften its viewpoint on percentage depletion. As long as the present law exists, Treasury will probably continue to harass taxpayers in the hope of obtaining the conflicting court decisions it so ardently seeks.

This leaves producers little recourse but to continue to take the maximum percentage depletion under the most liberal court interpretations of the present Revenue Code—and hope for the best.

It's a confusing picture with no clear end in sight. Any more optimistic view than this—at least at the moment—would not be justified. END

LT. WT. AGG. SURVEY, *from p. 87*

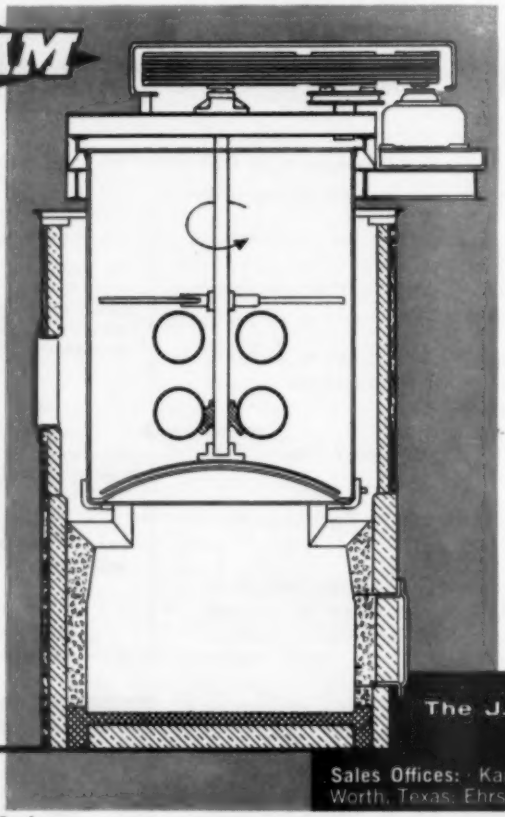
as one expert comments, because keen competition with the heavier aggregates (and with other lightweights in the larger markets) keeps prices down. (4) Finally, plant manager-engineers who can successfully produce a complex new material are "as scarce as hens' teeth." This is pointed out by B. A. Batson, president of Shalite Corp., Knoxville, Tenn.

Despite all the problems facing them, lightweight aggregate producers are facing the next decade confidently. Who wouldn't, with total industry sales now roughly 5½ times the 1950 total!

Part 2, in a forthcoming issue, will go into more detail on concrete block markets for lightweight aggregates.

EHRSAM

OUTSTANDING SUSPENDED CALCINING KETTLE



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This shock-absorbing-type drive eliminates the vibration so often found in the gear-driven type of kettle. For further information, phone, wire, or write . . .

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PENSION PLAN, *continued from p. 108*

tions to visualize how a qualified plan will operate in their organization: (1) Who will be eligible for the plan? (2) When will they retire? (3) What will employes receive at retirement? (4) How will the fund be accumulated?

To resolve these questions, the member company has two alternatives: (1) It can delegate to a key executive the responsibility of investigating them and coming up with sound recommendations for further consideration. If this course is followed, the key executive (in addition to his other duties) then undertakes to learn, in a very short period of time, the complexities of sound retirement program design—an assignment that has taken professional experts in this field a number of years to carry out successfully. (2) Or top management can engage the services of a trained consulting firm to do the job, thereby permitting the key executive to continue in his efforts to increase company profits.

As employe benefit plan consultants to the NSGA-NRMCA, the firm of Donald Shepherd and Co., Inc., services the Master Retirement Trust through its central office. In addition to plan design and calculations, the company will make available on request annual employe reports summarizing benefits that each participant has provided for his employes. Local representatives of the firm in each area will present and explain the benefits of the plan to employes.

Upon application to the plan consultants, a member company of NSGA-NRMCA will receive an outline including all the details necessary to make the plan effective, such as costs, benefits, tax considerations and administrative procedures.

Companies and operators interested in seeing what a qualified retirement plan will do for their organizations are invited to contact either: Employe Benefit Plans, NSGA-NRMCA, Munsey Building, Washington 4, D.C., or Donald Shepherd and Co., Inc., 1400 Hancock St., P. O. Box 441, Quincy 69, Mass. **END**

A NEW ERA? *continued from p. 132*

A. Teichman, Jr. and William B. Fergusson, Pennsylvania Railroad, is the increasing demand for gypsum board, which accounts for about 43 percent of all gypsum production.

Because of this growing demand, a gypsum ex-

Please turn to page 142

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Dealer inquiries solicited.

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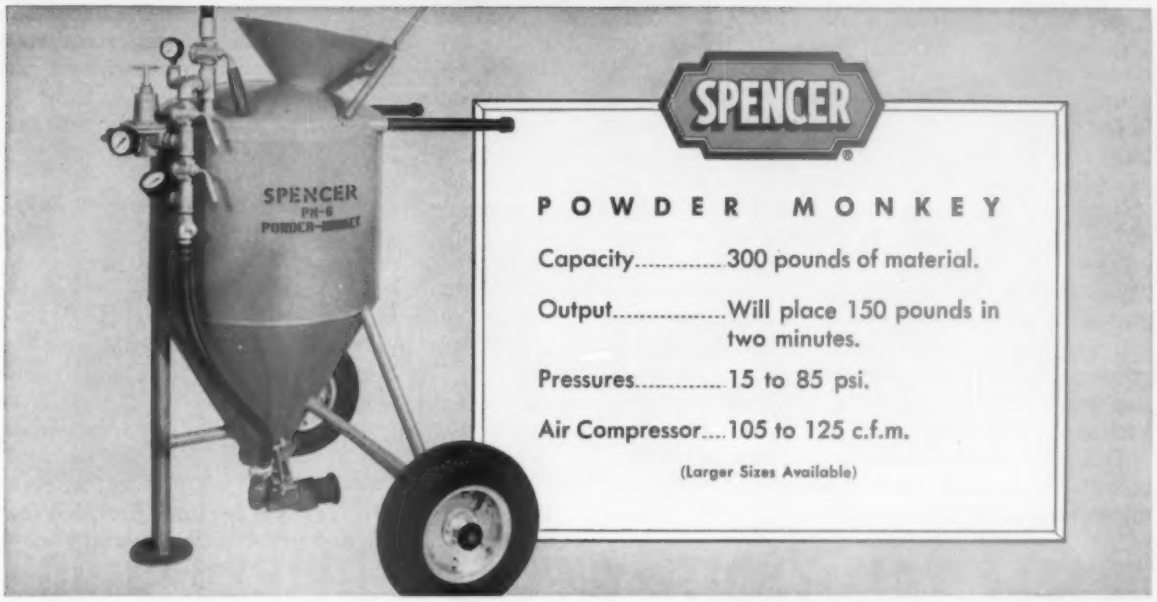

One man is all it takes to fill horizontal holes with Spencer N-IV Ammonium Nitrate and fuel oil, when you use the new Spencer Powder Monkey. Available with wheels for towing, or mount on powder truck.

Now! A Fast, Easy Way To Fill Horizontal Holes With Ammonium Nitrate-Fuel Oil Mixtures:

New Spencer Powder Monkey saves you $3.00 to $4.00 per 100 pounds on bag costs alone!

Scientifically designed for placement of Spencer N-IV Ammonium Nitrate-fuel oil mixtures in horizontal blast holes, the Spencer Powder Monkey extrudes the mixture into the hole. Then the Powder Monkey is filled with sand, which is blown into the holes for stemming.

There's no need for tamping bags, tamping equipment, or the labor needed to fill and tamp bags into the hole!

With the Spencer Powder Monkey, you can actually load faster and more economically than with any other known method! Job-tested on holes ranging from 1⅝ inches to 8 inches in diameter, the Powder Monkey has proved itself under a wide variety of conditions.

Another advantage of placing Spencer N-IV and fuel oil with the Powder Monkey is that you can prime the entire charge with detonating cord at the same time you insert the hose in the blast hole for filling.

World's Most Efficient Low-Cost Blasting Method

Spencer N-IV Ammonium Nitrate, combined with fuel oil and fired with detonating cord, produces a superior blast for these two reasons: (1) Spencer N-IV has a special structure that lets the prills absorb oil more easily. (2) Spencer N-IV contains a higher percentage of ammonium nitrate than other brands.

Because of these two advantages, Spencer N-IV as an ingredient in blasting agents produces more energy than competitive grades of ammonium nitrate, yet costs no more!

With Spencer N-IV and fuel oil you save on priming costs, too, because this mixture can be initiated with a single strand of 175-grain detonating cord. And you put an end to the danger of storing high explosives on the job site because Spencer N-IV by itself is not an explosive!

Spencer N-IV is available in all-plastic 50-lb. bags that are tougher than paper—so tough they reduce breakage as much as 50%. And you can store them right out in the open. (Also available in paper bags.)

For complete information, mail the coupon below:

SPENCER

Spencer Chemical Company
405 Dwight Building
Kansas City 5, Missouri

Yes! I want to know more about:

☐ Spencer Powder Monkey
☐ Spencer N-IV Ammonium Nitrate as a blasting ingredient.

Name_____

Firm_____

Address_____

City_____ State_____

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A NEW ERA? *continued from p. 140*

ploration program was carried out in Indiana. Data for the program on gypsum occurrence were obtained from a study conducted by Duncan McGregor of the Indiana State Geological Survey.

Results of the exploration showed that control of the gypsum deposit was physical when considering the configuration of the original basin of deposition. Mr. Teichman described the entire program of drilling that determined these facts. Control was physical-chemical in nature due to the original deposition of a metastable gypsum that was converted to anhydrite and then hydrated back into stable gypsum.

Technical sessions on the second day, held jointly with the Coal Division, dealt mainly with acid mine drainage and its control. **END**

OPERATORS WIN CASES, *from p. 122*

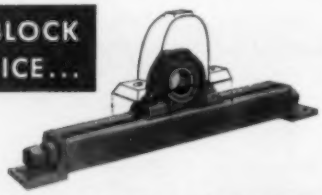
yourselves on these industry successes, to increase your efforts to avoid becoming the target of such litigation. There still are gains to be made in improving quarry operations and good neighborliness. It hurts any business to be called a nuisance. Don't lay yours open to that attack by careless housekeeping and unwarranted disturbances. In this, as in every industry, a company has to work hard to earn the good will of the community it serves.

A classic statement on reasonable use of property was made by the Court of Appeals of New York over a half century ago. It has been consistently adopted and followed since by courts throughout the country:

"The ancient maxim that one should use his property so that another is not injured is the foundation of the well established rule that no one may make an unreasonable use of his own premises to the mutual injury of his neighbor's premises; and if he does, the latter has the right of action even if he is not driven from his dwelling, provided the enjoyment of life and property is materially lessened."

To this the court added, "Whether the use of property by one person is reasonable with relation to the comfortable enjoyment of his own property by another generally depends upon many and various facts such as location, nature of use, character of the neighborhood, extent and frequency of the injury, and the effect on the enjoyment of life, health and property and the like." **END**

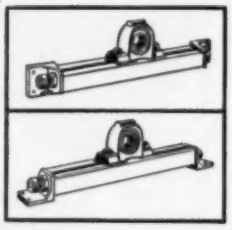
USE PILLOW BLOCK OF YOUR CHOICE...



Versa MOUNT

TAKE-UP FRAME
Mount Side or Top

- Use with any standard pillow block. One basic frame size for all makes and types—ball, roller or babbited.
- Mounts either side or top. Simply loosen locknut and turn mounting flange to desired position.
- Easily installed on old or new equipment.
- Delivery from stock in sizes for ½" to 2¼" pillow blocks, travel lengths from 2" to 36".
- Mounting screw is totally enclosed for protection against dirt, contamination, etc., yet readily accessible when lubrication or cleaning is desired.
- All parts can be quickly disassembled without special tools and *are individually replaceable.*



Request Bulletin V-647 and Prices.

LOVEJOY FLEXIBLE COUPLING CO.

4822 W. LAKE STREET CHICAGO 44, ILLINOIS

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CONTRACT CORE DRILLING

EXPLORATION FOR MINERAL DEPOSITS
INCLUDING URANIUM & LIMESTONE — ANYWHERE

FOUNDATION TEST BORING

GROUT HOLE DRILLING

Skilled crews and complete stock of core drills and accessory equipment maintained at all times

Core Drill Contractors for more than 60 years

JOY MANUFACTURING CO.
Contract Core Drill Division
MICHIGAN CITY, INDIANA

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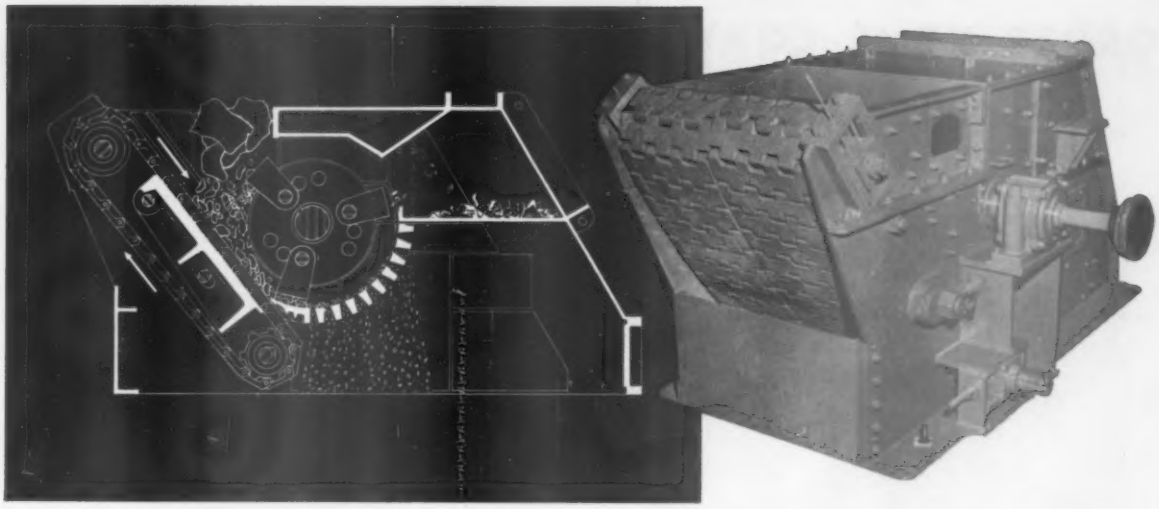
WHAT ARE YOU PAYING FOR REPAIRS?

The money you are paying to keep worn-out equipment working may be just enough for you to own better equipment.

See the **"WHERE TO BUY"** *Section*



FOR CRUSHING WET AND STICKY MATERIALS

If you're bothered with plugging and time lost getting the mill clear, here's the crusher that'll do away with your troubles. It's the Pennsylvania Non-Clog Hammermill. When in operation the traveling breaker plate carries the feed into the path of the hammers at a fixed rate of speed, making it impossible for the sticky feed to build up on the breaker plate out of reach of the hammers. In extreme wet feed conditions, where frequent clean-outs in the rear of the crusher may be necessary, the Non-Clog can be equipped with a self cleaning device. For complete information on the Pennsylvania Non-Clog Hammermill, send for bulletin 1052. Pennsylvania Crusher Division, Bath Iron Works Corporation, West Chester, Pennsylvania.

Pennsylvania
CRUSHERS

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ORDER YOUR COPY OF THE J. A. Nicholson Book

READY MIXED CONCRETE TODAY

Only $5.00 a copy

James A. Nicholson, for many years the President of the Nicholson Concrete Company of Toledo, Ohio, was named President of The Toledo Plaster & Supply Company, Toledo's oldest building material firm in August, 1959.

Jim (as he is known in the industry) Nicholson is a graduate lawyer and first entered the concrete business in 1936 after serving six years as head football coach of the University of Toledo. Starting from scratch, after taking over a defunct building supply company, he set out to develop a ready-mixed concrete business without previous knowledge. Today he is recognized as one of the best informed men in the industry.

He is a past president of the Ohio Ready Mixed Concrete Association and former director of the National Ready Mixed Concrete Association. Mr. Nicholson has also spoken on a number of industry problems at different concrete quality schools held throughout the country.

Nicholson Concrete Company was incorporated in 1950, the business having been operated and built up previously as an individual enterprise. Four central mixing plants serve the Toledo area, and the delivery fleet consists of approximately 45 mixer trucks. The company employs 75 men and the volume of sales in ready-mixed concrete is currently at the rate of $2,000,000 annually.

ROCK PRODUCTS
79 West Monroe Street
Chicago 3, Illinois
Maclean-Hunter Publishing Corporation

THERE ARE apparently but two ways to learn the intricacies of any business or profession. One is in the hard school of individual personal experience, which is often costly and unnecessarily discouraging. The other is a thorough understanding and intelligent use of the experience of others. When a qualified author, such as Mr. Nicholson, discusses his experience, including failures and mistakes, in an analytical and philosophical mood, the reader can profit from the recorded knowledge of another. Having once absorbed the breadth and completeness of the contents of this book, the reader should be well protected against errors of judgment that have proved so costly to many a new enterpriser. READY MIXED CONCRETE is a compilation of a series of articles on the ready-mixed concrete industry that have been published serially in CONCRETE PRODUCTS during the last several years. Now being offered for the first time in book form it is a veritable encyclopedia on ready-mixed concrete.

WE RECOMMEND Ready Mixed Concrete to all manufacturers, executives and salesmen who are interested in the production and marketing of building supply products.

The book sells for $5.00 per copy.

Each of the ten sections listed below consist of from three to eleven chapters in which the various subjects are comprehensively treated.

- Operation Fundamentals
- Special Operation Consideration
- The Story of the Ready-Mixed Concrete Industry
- Quality Problems and Importance of Good Practices
- Dealing with Customers
- Delivery Control Problems
- Handling Labor Problems
- Merchandising Ready-Mixed Concrete
- Preventive Maintenance in the Ready-Mixed Concrete Industry
- Business Office Operations

PLEASE ENCLOSE REMITTANCE WITH ORDER

RP-11

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79 West Monroe Street, Chicago 3, Illinois

Please send _____ copies of READY MIXED CONCRETE for which I enclose $_____ ($5.00 per copy).

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STREET _____

CITY _____ STATE _____ ZONE _____

Selected by

STANDARD MATERIALS

not once but

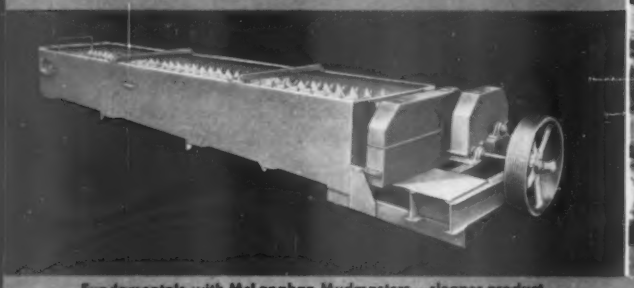
10 times

This progressive Indiana and Kentucky operator selected ten McLanahan Mudmaster Log Washers for installation in seven gravel plants during a two year period.

In Standard Materials Corporation's Maywood (Indianapolis) plant, two 10" x 30' McLanahan Log Washers.

In the Plainfield, Indiana plant, a 10" x 25' Log Washer.

In the Clinton, Indiana plant, a 10" x 25' Log Washer.



Fundamentals with McLanahan Mudmasters—cleaner product, profitable tonnages, up to 40% lower power requirements, compared with other types of washers.

McLANAHAN SINCE 1835

LOG WASHERS

McLANAHAN AND STONE CORPORATION
HOLLIDAYSBURG, PENNSYLVANIA

In the Milton, Kentucky plant, a 10"x30' McLanahan Log Washer.

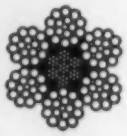
In the Burlington, Kentucky plant, a 10"x25' McLanahan Log Washer.

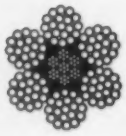
In Standard Materials' 86th Street (Indianapolis) plant, a 10" x 25' McLanahan Log Washer.

Now under construction, at the Speedway (Indianapolis) plant—one 10"x30' and two 10"x25' Logs.

YOU CAN'T BARGAIN WITH SAFETY

WICKWIRE ROPES FOR THE QUARRYING INDUSTRY


6 x 21 Filler Wire, IWRC


6 x 25 Filler Wire, IWRC

6 x 41 Filler Wire, IWRC

6 x 19 Seale, IWRC

For detailed recommendations, write the nearest CF&I sales office, and ask for WR 737.

For safety and performance

. . . *order* CF&I-WICKWIRE

"job-designed" wire ropes

The Image of CF&I—a giant steelman—stands for the rigid quality-controls and testing procedures that are carried out in the production of Wickwire Rope. This Image also reflects CF&I's ability to design a specific product to meet a particular need.

These are the very reasons why CF&I-Wickwire Ropes are both *safe*—as only a *quality* wire rope can be—and *suitable*—because they are available in a *complete range* of wire grades, types, sizes and constructions, designed to meet each industry's requirements.

Avoid the losses—due to injuries and wrecked equipment—that can occur when a "bargain" rope fails. Buy a quality wire rope that's designed for the job it must do—a CF&I-Wickwire Rope.

WICKWIRE ROPE

THE COLORADO FUEL AND IRON CORPORATION

CF&I STEEL

In the West: **THE COLORADO FUEL AND IRON CORPORATION**—Albuquerque • Amarillo • Billings • Boise • Butte • Denver El Paso • Farmington (N. M.) • Ft. Worth • Houston • Kansas City • Lincoln • Los Angeles • Oakland • Odessa (Tex.) Oklahoma City • Phoenix • Portland • Pueblo • Salt Lake City • San Francisco • San Leandro • Seattle • Spokane • Tulsa • Wichita

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6794

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RP-11-59

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NOVEMBER, 1959
Chicago 3, Illinois

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Company Address_____ City_____ Zone____ State_____

Send information on items identified by key numbers beside or below items of interest to you. List your choice in numerical order. Limit 10 per card.

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MONEY-MAKING IDEAS FOR YOU - - - FREE

HOW TO USE THIS SERVICE

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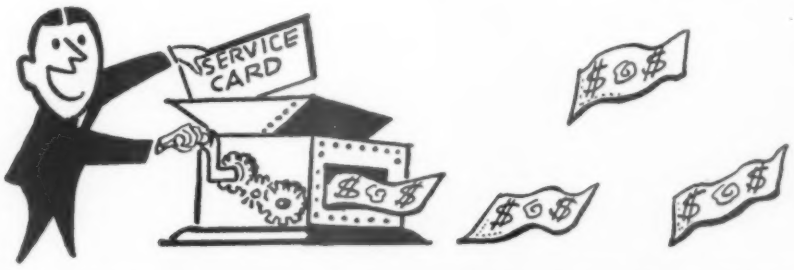
2. **New Machinery**
3. **New Literature**

There is a wealth of valuable information in the manufacturers' booklets offered in this issue. For your convenience, each advertisement, each new machinery and new literature item has been given a key number. Simply fill in the proper key number in the appropriate space on the card above and send it to us. We'll do the rest.



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There is a wealth of valuable information in the manufacturers' booklets offered in this issue. For your convenience, each advertisement, each new machinery and new literature item has been given a key number. Simply fill in the proper key number in the appropriate space on the card above and send it to us. We'll do the rest.

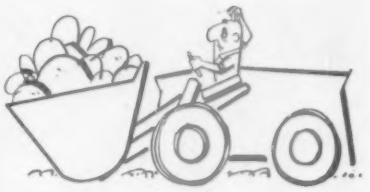
When is a 2-yd Loader *Not a 2-yd Loader?*

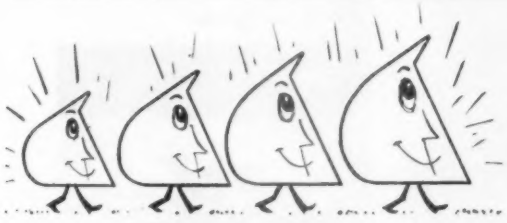
. . . Simply when it operates over or under carrying capacity. The right combination to peak production and longer loader life is the right size bucket on the right size loader.

That's why Allis-Chalmers offers a wide selection of buckets for each of the TL-14, TL-16 and TL-20 TRACTOLOADERS. You choose the size that's just right for the weight of materials you handle and your job operating conditions.

Some buckets are too big . . . others too small

Using a bucket that's too big for the material you handle can cause excessive repairs and downtime . . . using one that's too small costs you money because you're not getting all you can out of your loader. That's why you should select your bucket/loader by carry capacity. For example, with the TL-20 which has a 9,000-lb carry capacity, you could use a 3-yd bucket in materials that weigh 3,000 lb. You could use a 5-yd bucket with materials that weigh 1,800 lb.





Fit the bucket to the job

Whether you're working good, level terrain, swampy ground or hilly country, there's a right loader and bucket combination for your material needs . . . your operating conditions. Choose from 17 bucket/loader combinations.

BOTH *loader and bucket* have to be tough

. . . or the most efficient selecting in the world won't help! That's why Allis-Chalmers offers such outstanding features as extra-high spill guards . . . double-bottom bucket and replaceable wear plates — why TRACTOLOADER axles are pin-connected directly to the frame with 2-inch-diameter steel pins instead of the usual U-bolt method. There is no rolling or shifting under load — no bolts to work loose, no mounting plates to warp out of shape.

Your Allis-Chalmers construction machinery dealer can assure you longer loader life . . . more consistent production year after year than anyone else. His products are by-products of experience — backed by first-line quality parts and good service.

ALLIS-CHALMERS, CONSTRUCTION MACHINERY DIVISION, MILWAUKEE 1, WISCONSIN

TL-14 — 6 buckets
from 1 to 3 cu yd • 86 hp gasoline
83 hp diesel • 14,850 lb
TL-16 — 5 buckets
from 1½ to 4 cu yd • 109 hp gasoline
104 hp diesel • 18,000 lb
TL-20 — 6 buckets
from 2¼ to 5 cu yd
130 hp diesel • 23,250 lb

move ahead with ALLIS-CHALMERS

...power for a growing world

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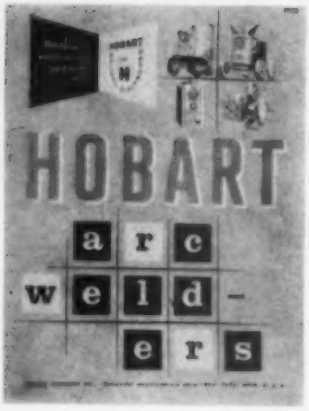
NEW LITERATURE



Welding equipment catalog

HOBART BROTHERS CO. is now distributing a new 24-page catalog giving its complete line of arc welding machines. Available are gasoline and diesel engine-driven models, engine-driven welder-power combination units, electric-motor driven arc welders, rectifier-type welders, transformer-type welders, ac. and dc. inert-gas-shielded arc welders and a complete line of automatic and semi-automatic welding equipment.

Enter 500 on Reader Card

Cyclone dust collectors

RESEARCH-COTTRELL, INC. is distributing a new bulletin, "Cyclo-trell Mechanical Dust Collectors." It describes recent improvement in involute design, designed to improve collection of abrasive or heavy dust loadings. Also given is data on a new hopper discharge valve and larger diameter tubes for the Cyclo-trell design.

Enter 501 on Reader Card

Rear-dump highway trailers

TRAILCO MANUFACTURING AND SALES CO. has issued a brochure on its on-highway dump trailers of aluminum or steel. Top feature is custom design, which permits Trailco to meet the producer's needs exactly and economically, the maker states.

Other features noted are lubrication-free tandem axle, single Hyco multi-stage telescopic cylinder, and exclusive Trailco Lock-O-Matic spring loaded clamps which eliminate body-chassis vibration. The firm's aluminum dump trailers reportedly cut unloaded weight by 40 percent compared with standard steel models, thus boosting payloads.

Enter 502 on Reader Card

Cyclone dust collectors

TORIT MANUFACTURING CO. has published information sheets on its complete range of 8 cyclone separators. The dust collectors can protect machinery investment, product quality, employe health and cut maintenance costs, Torit states. Multiple rating tables, complete specifications and a dimensional drawing are part of each information sheet. The collector can be installed so it doesn't take valuable floor space, the maker notes.

Enter 503 on Reader Card

Kilns, dryers and coolers

STANDARD STEEL CORP. is distributing a 28-page technical bulletin, "How to Make Decisions on Rotary Processing Equipment." Four graphs help the producer in making calculations for new drying and cooling installations. Also, a thorough description of the many types of dryers and special equipment made by the company is given.

Standard has more than 75 years experience in the design and manufacture of heavy rotary processing equipment, the bulletin notes.

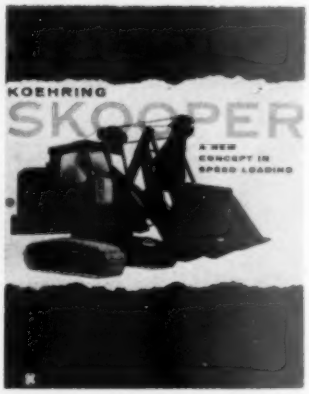
Enter 504 on Reader Card

14-cu. yd. (struck) scraper

CATERPILLAR TRACTOR CO. has released Form 33451, describing its new No. 619 wheel tractor and No. 442 Lowbowl scraper. The brochure highlights the performance-boosting details of the combination, which features a 225-hp. Cat diesel engine and 14-cu. yd. struck capacity scraper bowl. Smooth ride and inherent balance of the unit give the tractor four-wheel steadiness and two-wheel maneuverability, Caterpillar states.

Enter 505 on Reader Card

Front-end loader



KOEHRING DIVISION has just released an 8-page bulletin on its model 205 Skooper, a full-revolving, crawler-mounted front-end loader. It is available with a rehandling, rock or general-purpose bucket, and can load up to 400 tph. Because the travel system of the crawler-mounted unit needn't move during loading, operating costs are reportedly cut because waste motion is eliminated.

Enter 506 on Reader Card

Conveyor, elevator belting

HOME RUBBER CO. has released a 4-page brochure entitled "Conveyor and Elevator Belts." All specifications and applications for the company's brand of rubber belting are listed, with weight computation and comparisons to other leading brands. The brochure is suitable for binding into supplier files.

Enter 507 on Reader Card

(Continued on page 152)

BUELL PUTS "DOUBLE EDDY" TO WORK TO INCREASE DUST COLLECTION EFFICIENCY!

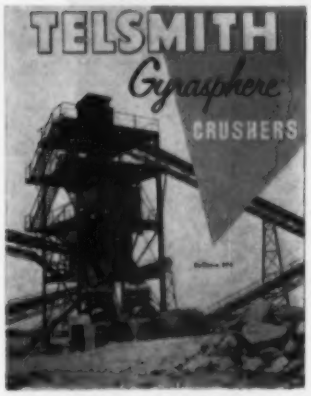
Ordinary cyclones provide limited efficiency in recovering cement dust from flue gases, because of "double eddy" currents inside all cyclones. But Buell Cyclones make the Double Eddy work to increase efficiency.—The Double Eddy circulates vertically inside cyclones, acting against the normal separating force of the spinning stream of dust and gas. Buell Cyclones have a narrow "Shave-off" port (2) at the top of the casing. This port catches and removes dust trapped in the Double Eddy. It makes the cyclone more efficient instead of less.—This is one of the reasons eight out of ten Buell installations pay for themselves in five years or less.—Only Buell Cyclones combine this extra efficiency with large diameter. They will not clog or plug even with dust loadings up to one pound per cubic foot of gas. No field fitting is needed: They are completely assembled and match-marked before shipment. They can be completely lined, inside and out, against heat, corrosion and abrasion.—For a list of installations near you, a copy of our Catalog 103, or other information, call our nearest representative, listed in the telephone classified directories of most major cities under "Dust Collection Systems". Or write Dept. 17-K, Buell Engineering Company, Inc., 123 William Street, New York 38, N. Y. (Subsidiary: Ambuco Limited, London, England.)

1. Inlet for dust-laden flue gas.
2. Dust Shave-off port.
3. By-pass dust channel.
4. By-pass re-entry opening.
5. Dust outlet.
6. Clean flue gas outlet.

EXPERTS AT DELIVERING EXTRA EFFICIENCY IN DUST RECOVERY SYSTEMS • Cyclones • "SF" Electric Precipitators • Combination Systems • Dry Classification Systems

buell®

Enter 1034 on Reader Card



Secondary crushers

SMITH ENGINEERING WORKS has just published Bulletin 274, describing its Telsmith Gyrasphere crushers made in sizes 24, 36, 48 and a new 66-in. model. This big new model has a hydraulic mechanism for quick size adjustments and a full force-feed oiling system. A uniform, cubical product, plus low power requirement and low upkeep costs are possible with the Gyraspheres, Telsmith reports.

Enter 508 on Reader Card

Hardfacing electrode

AMERICAN MANGANESE STEEL DIVISION issued data on a new tubed electrode for general purpose hardfacing, Amsco 53. It is said to be easy to handle, and to have a stable, low-spatter arc with smooth running, outstanding speed and excellent build-up, Amsco reports. It is especially alloyed for jobs like crusher rolls, hammermills, scraper blades and dipper teeth, where both impact and abrasion are a problem. *Enter 509 on Reader Card*

Rubber-tired tractor-dozer

LETOURNEAU-WESTINGHOUSE CO. is making available a 16-page bulletin on its 218-hp. Model C Tournatractor. The dozer's four big rubber tires give it faster between-job speeds, fewer wearing parts and lower maintenance cost, the maker reports.

The 34,600-lb. tractor can work gravel pits, clean haul roads, clean up around shovels and easily work across railroad tracks. Its top speed of 17.2 mph. means time saved between scattered jobs without "piggyback" assistance, L-W states. Higher working speeds are possible, too, the bulletin notes, because big, low-pressure tires cushion the load, and a heavy welded steel main-case resists torsional stresses and impact shocks.

Enter 510 on Reader Card

Automatic lubrication

LINCOLN ENGINEERING CO. is distributing a catalog describing its Multi-Luber Automatic Power Lubrication Systems for trucks, material handling equipment and industrial processing machinery.

Air, vacuum and manually-operated

Multi-Luber Systems, their many applications, methods of operation, accessories and parts are given in the catalog, along with illustrations and specifications. *Enter 511 on Reader Card*

History of hydraulic dredge

ELLICOTT MACHINE CORP. has issued a report tracing the development of the modern hydraulic dredge. Compact, mobile units are emphasized. The design and performance of modern units is outlined, along with the principles of hydraulic dredging.

Enter 512 on Reader Card

Dump-trailer equipment

HERCULES STEEL PRODUCTS CO. has made available a booklet, "Profitable Payloads," which describes its line of single and tandem-axle models, of either frameless or frame-type design, and made of steel or aluminum. Capacities from 10 to 25 cu. yd. and lengths from 16 to 30 ft. are available, Hercules notes. Among the options available are either smooth or corrugated sides and floors, special underbody and hoist designs, suspensions, various "rolling" components, wet lines and landing gears.

Enter 513 on Reader Card

Perforated metal screens

CROSS PERFORATED METALS PLANT, National-Standard Co. has published a brochure telling how to specify perforated metal for aggregate and other vibrating screens. The 12 steps required are given, as is a description of the firm's Cross Hexcreen, Conidure pierced sheets and Rima wedge-shaped-wire screens.

Made of special analysis steel, the perforated metal screens are said to give as much as twice the life of wire-cloth screens, plus one-piece construction that eliminates stretching and tension problems. Too, they permit a smaller long-run investment, Cross states. *Enter 514 on Reader Card*

Making safety interesting

THE NATIONAL SAFETY COUNCIL is now distributing "Showmanship in Safety," a new 96-page illustrated booklet telling how to inject fun, color and showmanship into industrial safety programs. The all-new second edition gives many ideas for stunts, demonstrations and promotions that will help build interest and create favorable attitudes toward safety efforts.

Enter 515 on Reader Card

Versatile sand classifier

WEMCO DIVISION is distributing a brochure describing its new Sand-Sort classifying tank. The unit is a free settling sand classifying tank for removing excess fines and water from a slurry. It can eliminate unwanted size fractions and produce two or more sands of different size gradations, the company states. *Enter 516 on Reader Card*

Crushing equipment

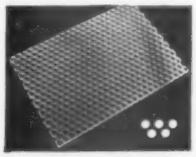
EAGLE CRUSHER CO. has published a catalog describing its full line of crushing equipment and portable crushing plants. The line includes jaw crushers, roll crushers, hammermills, pulverizers and multi-cage disintegrating mills (for aglime). Also included are a description of Eagle's portable crushing plants, including the 5500 series, with a jaw crusher, and the 6900 series, with both jaw and roll crushers. *Enter 517 on Reader Card*

Enter 1018 on Reader Card

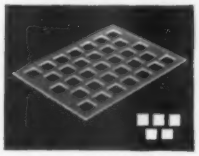
Cross HEXCREENS*

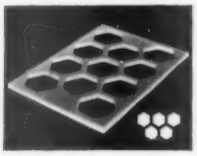
process 100,000 tons of stone without significant wear

In the unretouched photo above you see the actual sections of CROSS Hexcreen that have screened over 100,000 tons of crushed stone for a leading Pennsylvania firm. Six sizes of Hexcreen—ranging from 9/32" to 4 1/16" hexagon holes (1/4" and 3 1/4" equivalent square openings)—are used in this triple-deck vibrator. The reason... hexagon-shaped holes provide uniform sizing and maximum capacity, and CROSS Special Analysis Steel gives long service.



CROSS makes a complete line of perforated screens to fit every need.





This is another example of the cost savings and improved performance you get with CROSS Perforated Screens. They're rigid one-piece units—no stretch, no loss of screen tension. You save on down-time costs, too, because screen adjustments and reshaping are eliminated.

CROSS PERFORATED SCREENS are available in a wide range of sizes with uniformly spaced square, round and hexagon perforations, staggered for increased capacity and efficiency. For additional information on CROSS Screens for shakers, vibrators and revolving screens, write CROSS PERFORATED METALS, National-Standard Company, Carbondale, Pa.

*Trade Mark

CROSS Perforated Metals

Carbondale, Pa.

NATIONAL STANDARD

NEW PATENTS

by OLIVER S. NORTH

RECENTLY ISSUED PATENTS ON NONMETALLIC MINERALS*

Perlite

2,902,379—Method for making a composite fibrous agglomerate consisting of **asbestos** and expanded **perlite.** E. g., crushed raw perlite rock is mixed with chrysotile fiber, lime and sodium silicate, and the mixture heated in a rotary kiln to cause expansion of the perlite. The product is used in the making of an improved fiberized gypsum. (to L. S. McCollum and S. Gindoff; assigned to International Minerals & Chemical Corp.)

Lime

2,901,837—Design for an improved apparatus for uniformly cooling hot calcined **lime** particles. The apparatus is effective even though the particles have become segregated or classified by free settling. (to L. H. Niems; assigned to Marblehead Lime Co.)

2,902,346—Method for making pressure-hydrated **lime,** particularly dolomitic lime, whereby the hazards of the usual one-step method are eliminated and a product having improved soaking and hoddability characteristics is produced. A mixture of quicklime, atmospherically-hydrated lime and water is subjected to superatmospheric pressure hydration. (to J. Volk; assigned to National Gypsum Co.)

Gilsonite

2,903,409—Use of **gilsonite** or other natural asphaltites of optimum particle size grading for the insulation and corrosion protection of underground pipes. The usual step of heating the material after placing it around the pipes is not necessary in this method. (to P. L. Morse; assigned to American Gilsonite Co.)

Gypsum

2,890,966—Use of **gypsum** plaster and portland cement in a cold water paint. (to D. P. Moore)

2,892,339—Design for sandwich panels or slabs with cell-foaming walls faced on both sides with sheets of **gypsum** plaster. (to S. H. Flower, J. Parsons and N. G. W. Loudon. Assigned to Bellrock Gypsum Industries Ltd.)

Wollastonite

Canadian 580,802—Use of **wollastonite** in an alumina-wollastonite ceramic body, such as porcelain. (to E. J. Rogers and R. Russell, Jr.; assigned to Bendix Aviation Corp.)

Vermiculite

2,901,775—In a method for insulating pipes carrying hot or cold fluids and therefore subjected to intermittent expansion and contraction, a form is positioned around the pipe and the intervening space filled with exfoliated **vermiculite** or expanded **perlite,** the particles of which have been coated with asphalt or coal tar. The aggregate is moderately compacted in place, forming a resilient jacket around the pipes which will not crack when the pipe expands. (to D. C. Goff; assigned to Zonolite Co.)

2,903,018—In the thermal insulation of non-straight pipes, such as loops and bends, a parting composition used to separate the pipe and a monolithic cementitious jacketing material consists of a mixture of grease and a lightweight aggregate, preferably either exfoliated **vermiculite** or expanded **perlite.** Use of this parting agent permits moderate radial and axial expansion of pipes without damage to the jacketing material. (to D. C. Goff; assigned to Zonolite Co.)

Canadian 579,751—Exfoliated **vermiculite** is used in an improved petroleum solvent dispersed heat insulating coating for spraying on walls or other structural members. (to H. J. Hoffman; assigned to Minnesota Mining & Mfg. Company)

Canadian 581,197—In the manufacture of an improved medium for propagation of plants from seeds, cuttings and the like, exfoliated **vermiculite** is mixed with rock phosphate and ammonium nitrate, the latter being combined with the vermiculite. This medium, which is maintained at a pH of 6 to 7, is free of any other water-soluble salts. (to G. W. Schmitz and R. E. Rothfelder; assigned to Zonolite Co.)

Asbestos

Canadian 579,940—Method of making a drilling mud for use in deep wells, under conditions of high temperatures and pressures. The mud consists of a mixture of an organic colloid, saturated salt water, and chrysotile **asbestos** fiber in the No. 1 to No. 6 grade range and having a fineness of minus 100 mesh. Two to 8 lbs. of fiber per barrel of mud is used to increase the viscosity of the mud under well conditions. (D. A. Rowe; assigned to Sun Oil Co. July 21, 1959.)

Phosphate rock

2,903,131—In the concentration of values from **phosphate rock,** the washer undersize is flowed through a conditioning area, where ponds are gradually filled with settling solids, forming a bed of upwardly decreasing particle size. After the water is removed, the bed is allowed to dry in the open for at least 3 weeks. Thereafter, it is mined and fed to the flotation mill. (to C. A. Heinrichs; assigned to Virginia-Carolina Chemical Corp.)

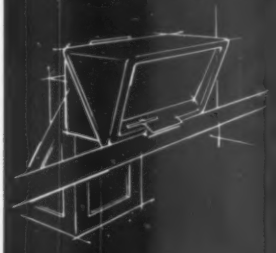
Expanded clay-shale

2,901,236—Design for an improved apparatus for producing **expanded clay** or **shale** sinter suitable for crushing to lightweight aggregate. The windbox include several sources of suction, for better control of sintering. (to R. F. Leftwich; assigned to Sayre & Fisher Company) *(Continued on page 156)*

General Electric X-Ray introduces a

REVOLUTION IN PROCESS CONTROL!

Analyzes materials continuously, or in individual samples —



- gases
- liquids
- solids
- mixtures of all three
- flowing slurries
- moving strips or wires
- a host of other forms

XEG scans materials in production, writes an on-the-spot x-ray analysis of up to 5 elements simultaneously

Here at last are means for wiping out a long-standing blind spot in process control: *XEG allows moment-by-moment surveillance of materials composition, right on the production line* — can detect and measure up to five elements at a time! XEG is a new and revolutionary *x-ray emission gage* — another exclusive product of General Electric "know how." Lends itself to more applications than you can imagine. Reveals quality . . . delivers facts on composition for rapid-fire, continuous feed-back to process control. Yet XEG requires no skilled operator! Ask your G-E x-ray representative for full details on potentials. Or simply write X-Ray Department, General Electric Company, Milwaukee 1, Wisconsin, Room RP-114.

Progress Is Our Most Important Product

GENERAL ELECTRIC

Enter 1035 on Reader Card

Nepheline syenite

2,898,217—Use of **nepheline syenite, feldspar,** and mullite in compositions for forming electrical insulators. (to J. Selsing; assigned to The Ohio Brass Co.)

Silica sand

Canadian 573,726—In the purification of **silica sand** to produce a glass grade product, an aqueous slurry of the sand containing a wetting agent and a highly ionised water-soluble and acid-reacting substance is subjected to attrition scrubbing to eliminate the iron. (to H. D. Segrove; assigned to British Industrial Sand Ltd., Apr. 7, 1959)

Clays

2,900,266—To improve the fluidity and/or increase the solids content of slurries of **kaolin, portland cement** raw mixtures, etc., a small amount of an alkali metal polyphosphatosulfate is added as a deflocculant. (to K. J. Shaver; assigned to Monsanto Chemical Co.)

2,903,424—Use of colloidal, or dispersible, **bentonite** in the clarification of aqueous liquids containing wool grease, suint, dirt, detergent, etc. (to W. Fong; assigned to U. S. Sec. of Agriculture)

2,903,434—In the preparation of acid-activated clay, particularly **montmorillonite,** the clay is reacted with an acidic aqueous solution consisting of hydrofluoric or fluosilicic acid along with hydrochloric or sulfuric acid. The clay is then separated, washed and heated to dryness. (to G. H. Gloss and R. Ittlinger; assigned to International Minerals & Chemical Corp.)

Canadian 579,997—In the production of petroleum catalysts by acid activation of **kaolin,** 3-20 percent of finely divided carbonaceous material is added to the clay-acid mixture prior to calcination. The reacted mass can then be calcined at a lower temperature than when no carbonaceous material has been added. Suitable carbonaceous materials include amorphous carbon, graphite, glycerol, fuel oil and mineral oil. (to A. J. Robinson and J. V. Weir; assigned to Minerals & Chemicals Corp. of America)

Canadian 580,033—In the production of petroleum catalysts by acid activation of **kaolin,** the acid reacted mass is pelletized, and the pellets aged 4-8 hrs. in free-flowing **silica sand** and then calcined to eliminate sulfates. Aging the pellets in sand in this manner requires less time than aging them in air alone. (E. W. Greene and A. P. Allegrini; assigned to Minerals & Chemicals Corp. of America)

Talc

British 815,711-2—An improved dry and free-flowing fire extinguishing composition comprises **talc,** a waterproofing agent and an absorbent. (to E. E. C. Cawood and S. B. Anderton; assigned to Nu-Swift Inc.)

Borax

2,886,461—Production of anhydrous crystalline borate from a furnace feed comprising a mixture of boric acid and calcined **borax.** (to D. S. Taylor and N. P. Nies; assigned to U. S. Borax & Chemical Corp.)

Sylvinite and langbeinite

2,900,232—In the processing of **sylvinite,** solid isopropylamine bicarbonate is added to the aqueous solution to precipitate virtually all of the sodium ions as sodium bicarbonate while leaving the entire amount of potassium chloride ions in solution. (to J. Lafont; assigned to Soc. d'Etudes Chimiques pour l'Industrie et l'Agriculture)

2,903,336-7—Process for recovering potassium values from **langbeinite** ore, whereby potassium chloride is not required and the products are virtually free of chloride contamination. The ore is reacted with magnesium oxide and uncalcined petroleum coke. (to G. H. Gloss and W. J. McGinnis; assigned to International Minerals & Chemical Corp.)

Canadian 578,375—Economic and efficient method and apparatus for countercurrent decantation leaching of **sylvinite** to recover potash values. (to W. P. Wilson; assigned to U. S. Borax & Chemical Corp.)

Canadian 580,365—A new reagent for use in froth flotation of **sylvinite** comprises an amine collector and a modifier from the class of abietyl alcohols, rosins and oxidized turpentine in an organic solvent. This reagent is effective with relatively coarse particles, such as may be scalped from dry milled ore; the resulting product is high-grade granular potassium chloride. (to E. A. Schoeld, J. D. Nabors and J. S. Reiter; assigned to Potash Co. of America)

Canadian 580,483—In the flotation of **sylvinite** ore, the ore is crushed to minus 6-, plus 28-mesh range and pulped, and the pulp conditioned with an aliphatic amine and a highly hydrophobic modifier, such as high molecular weight alcohol, organic acid ester or fatty acid amide. (to E. A. Schoeld, J. M. Fritschy and J. D. Nabors; assigned to Potash Co. of America)

Phosphate rock

2,895,799—Process for defluorinating **phosphate rock,** phosphatic solutions, etc. A heated film of phosphoric acid is directly contacted with a jet of steam to simultaneously concentrate and defluorinate the acid. (to I. M. Le Baron and E. Northcott; assigned to International Minerals & Chemical Corp.)

2,898,207—Method of treating **phosphate rock** to produce a fluorine-free fertilizer of improved citrate solubility and water solubility. The rock is reacted with chlorosulfonic acid. (to K. F. Schilling, M. J. Powell and E. A. Brice; assigned to Minerals & Chemicals Corp. of America)

2,899,271—In the manufacture of P_2O_5 whereby **phosphate rock** is treated with a cold aqueous solution of sulfur dioxide under pressure, P_2O_5 is added to raise the P_2O_5/CaO ratio to about 1.27 to 1. Calcium sulphite is precipitated and removed, and the residual solution heated to liberate sulfur dioxide and precipitate P_2O_5. (to R. Miché; assigned to Comptoir des Phosphates de l'Afrique du Nord)

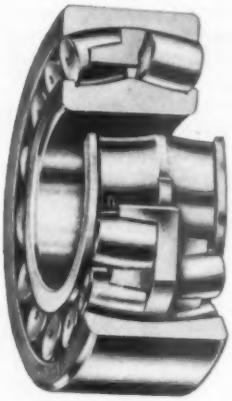
2,899,292—In the manufacture of dihydrogen phosphates, complete decomposition of the **phosphate rock** is obtained by treating it with an excess of strong phosphoric acid. (to R. C. Vickery; assigned to Horizons Inc.)

2,899,293—Process for producing fertilizer by dissolving **phosphate rock** in nitric acid, adding ammonia, thickening the slurry, and charging sulfur dioxide and ammonia gas into the slurry under pressure. (to E. Munekata; assigned to The Asahi Chemical Industry Co., Ltd.) END

SKF engineering solves major bearing problems

NEW SCREEN BEARING OFFERS THE CAPACITY AND FATIGUE LIFE NEEDED TO BOOST VIBRATING SCREEN PRODUCTION

Designers and users of vibrating screens continually look for ways to increase operating capacity. Their requirements create a special bearing problem—because of the combination of high loads and eccentric motion to which the bearings are subjected.



This is the new SKF screen bearing, now being produced in the most widely-used sizes.

A new screen bearing, developed by SKF, solves the problem. This bearing has the long rollers and high capacity of the "C" type spherical roller bearing SKF introduced in 1953. *It provides 40% greater load-carrying capacity and 3 times longer fatigue life than previous types.* And its specially-designed cage withstands the high eccentric motion peculiar to vibrating screens.

This cage is made of centrifugally cast bronze and has axially drilled and reamed pockets of a shape closely conforming to that of the rollers. Its spherical OD conforms to the contour of the outer ring sphere. This provides greater cage contact area, thereby reducing the unit stresses. It also eliminates lubrication problems as the cage is supported in the outer ring's spherical surface where ample lubrication is available. This cage is symmetrical and one piece construction assures dynamic stability. 5911

Drawing shows long rollers and close relative conformity of roller contour to ring contour in screen bearing design.

The new bearing is interchangeable with SKF 223 Series bearings used on screens in mines, quarries, steel mills, chemical and paper plants. For full details, write or call the nearest SKF distributor, sales office or SKF Industries, Inc., Philadelphia 32, Pa.

Spherical, Cylindrical, Ball, "Tyson" Tapered and REED Miniature Bearings

EVERY TYPE—EVERY USE

SKF®

SKF INDUSTRIES, INC. PHILADELPHIA 32, PA.

®REG. U. S. PAT. OFF.

Enter 1036 on Reader Card

NEW MACHINERY

High capacity small portable crushing, screening plant

THIS NEW PORTABLE crushing and screening plant features high capacity in a compact package. With a 15 x 36-in. jaw crusher, the single-pass unit is capable of producing 90 to 120 tph. based on handling 25 percent over 1-in. screen. A 2-cu. yd. feed hopper delivers material to a 3 x 5-ft. vibrating screen. All finished material is collected on a 30 in. wide inclined belt conveyor for delivery to trucks or to stockpile conveyor. *Goodman Mfg. Co., Halsted and 48th Place, Chicago 9, Ill.*

Enter 100 on Reader Card

Notched repair links for standard chain assembly

NOTCHED LINKS to make quick repairs of dragline chains have been developed. A notch permits each repair link to be cut easily and inserted into almost any manufacturer's link chain assembly.

When the repair link is welded with a low hydrogen rod and ground smooth, the finished link is said to be as strong as the original link. Repair links are available for all standard chain sizes and links. *Page Engineering Co., Clearing Sta., Chicago 38, Ill.*

Enter 101 on Reader Card

New 5-cu. yd. loader

A FIVE CU. YD. loader that does its own digging and converts quickly into a shovel, crane, dragline or pullshovel has been introduced. The new loader, the maker reports, eliminates waste motion in digging and loading a wide variety of materials from earth and rock to stockpiled materials. Outstanding features of the new machine are a long (9 ft. 10 in.) horizontal movement of the bucket and a 360-deg. swing. These advantages permit the bucket to dig into an embankment or stockpile, fill completely, and swing to any point of the compass for dumping—all without moving the crawler chassis.

By practically eliminating the need to maneuver the entire machine during

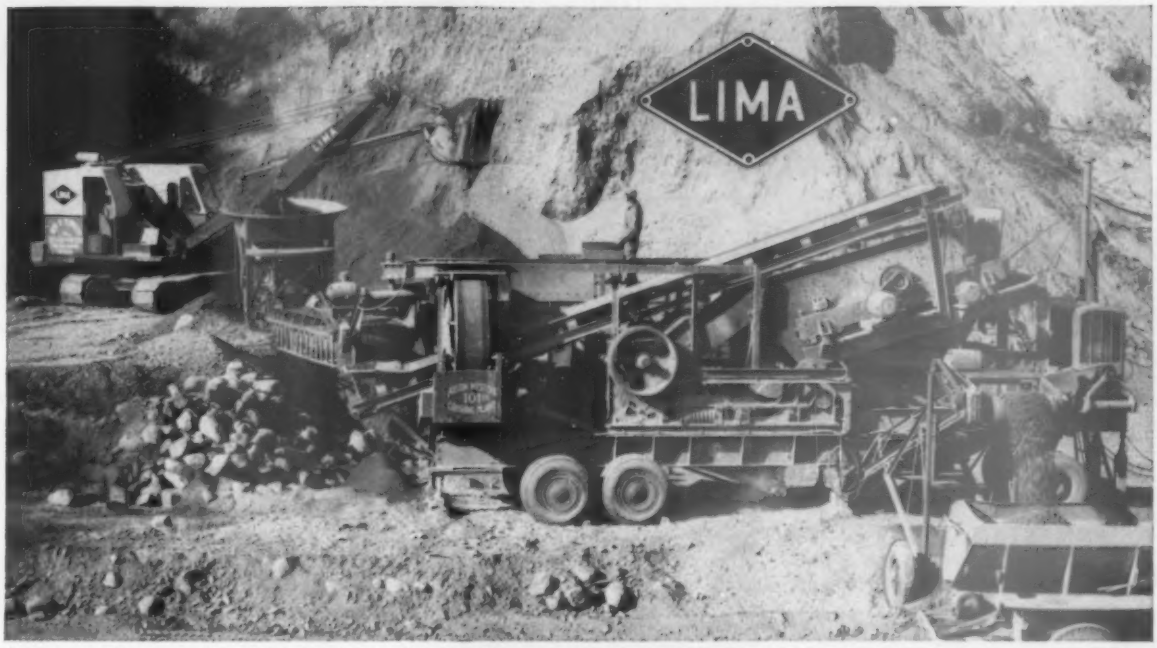
digging and loading operations, the loader speeds loading of materials into trucks, reduces travel wear and lowers fuel consumption.

The bucket has a special design to insure maximum capacity and clean dumping. With a maximum dumping height of 16-ft., 10-in. at an 18-ft. radius, the new loader easily dumps over the end or sides of trucks. Hydraulic operation of the bucket tilts it to an angle of 52 deg. from vertical to insure complete emptying. The operator exercises full control over either partial or complete dumping.

Quick and simple field conversion permits turning the loader into a 1¼ or 1½-cu. yd. shovel; a 40 or 50-ton crane; a 1¼ or 1½-cu. yd. pullshovel; or a dragline. *Baldwin-Lima-Hamilton Corp., Box 174, Lima, Ohio*

Enter 102 on Reader Card

(Continued on page 160)



Lima Austin-Western portable 101-SE Crushing and Screening Plant processes gravel and rock fed into its mechanical feeder in 1-cu.-yd. bites by Lima Type 44 Shovel. Accurately sized gravel travels conveyor direct to waiting State Highway truck at this Buchanan, Mich., site.

Crusher output averages 1000 cu. yd. daily— Lima Austin-Western 101-SE owner pleased

Roadbuilder John G. Yerington, of Benton Harbor, Mich., owns five Lima Austin-Western Crushing and Screening Plants. Of his portable 101-SE, shown above, Mr. Yerington says, "It is about 4 years old, but maintenance costs are extremely low. I'm well pleased with its ability to average over 1000 cu. yd. daily at a low cost per ton."

Superior performance

Thirty-one years ago, he bought his first Austin-Western equipment. Now he owns five Lima Austin-Western Crushing Plants and a Lima Type 44 Shovel. In addition, he has three graders, five rollers and a hydraulic crane—all Austin-Westerns. Obviously Mr. Yerington has learned from experience the superior capabilities of B-L-H equipment.

The rugged 101-SE is a completely portable, self-contained unit designed and built for rapid transport from job to job. High-speed production of construction materials at end-use sites reduces haulage time and costs. Diesel engine operates crushers and electric generator, which powers all other operations. Simplicity of transmission eliminates troublesome clutches, chains, sprockets and gearboxes . . . reduces maintenance, lowers tonnage costs. Only one man is required to operate the 101-SE by push button.

More tonnage for less

Lima Austin-Western Crushing and Screening Plants are engineered and quality built to produce a high volume of accurately sized gravel or rock over long years of trouble-free service. There is a portable or stationary Lima Austin-Western Crushing and Screening Plant exactly right for your needs. Learn how you can step up production and lower tonnage costs. See your nearest distributor or write us today!

Crawler-mounted Lima Type 44 Shovel empties its 1-cu.-yd. load into automatic feeder of Lima Austin-Western 101-SE Crushing and Screening Plant.

DISTRIBUTORS IN PRINCIPAL CITIES OF THE WORLD

LIMA AUSTIN-WESTERN Crushing, Screening and Washing Equipment

BALDWIN · LIMA · HAMILTON

CONSTRUCTION EQUIPMENT DIVISION • LIMA, OHIO

5926

Enter 1037 on Reader Card

High-level bin control devices for bulk

THREE NEW BIN control devices are now available to meet three common conditions in handling industrial bulk materials. An explosion-proof unit, as well as the normal duty and heavy duty types used in the rock products industries, is offered.

The new bin level controls can be installed in the conventional normally closed circuit, but can be connected in normally open circuits as well. Great flexibility in achieving automatic bin level control is possible by placing controls at various levels in the bin as well as top or bottom.

The controls can operate horns, lights, other control equipment as well as motors on elevators and conveyors. Each "Tellevel" bin control is a self-contained unit with a sensitive switch enclosed. The normal duty unit is used for applications in light and medium weight materials; the heavy duty for heavy, lumpy materials. *Stephens-Adamson Mfg. Co., Ridgeway Ave., Aurora, Ill.* **Enter 103 on Reader Card**

1960 trucks include diesel or conventional engines

DIESEL POWER as well as the conventional gasoline engine is featured in this manufacturer's line of 1960 trucks. Heavy duty trucks rated up to 5 tons are available with a choice of four diesel engines with ratings from 175 to 220 hp. Five new V-8 gasoline engines are suitable for the same heavy duty with power ratings from 178 to 228 hp.

A wide range of rugged, heavy duty transmissions match the power of the engines, including 5, 6, 8 and 10-speed units. The 6-speed transmission features a built-in, torque converter hydraulic retarder.

A more comfortable ride for the operator is claimed as an exceptional feature of the new trucks. Improved styling is offered without reducing the accessibility of the engine or ease of servicing and maintenance. *Dodge Trucks, 2751 Jefferson, Detroit 7, Michigan.* **Enter 104 on Reader Card**

Packaged nitrate

AMMONIUM NITRATE explosives are now available in factory-packaged units. Apcomite is available in two types complete with primer in 5-in. diam. and larger tubes. One type is for most normal applications; the other is offered with a higher density mix for use in wet holes.

The new explosive combines the advantages of low cost ammonium nitrate with the product control possible when mixing production-size batches under controlled conditions. The easily-handled 25-lb. bags are claimed to be safer and more convenient to handle than bulk shipments of fertilizer and primer oils. *Austin Powder Co., Cleveland 13, Ohio.*

Enter 105 on Reader Card

Big hammermill

LARGEST HAMMERMILL in this manufacturer's line has been designated Model 5040. With 50 in. wide feed opening and 40 in. hammer diameter, the unit was designed to meet the demand for larger production capacity in the rock products industry.

The new unit apparently gives a large volume of uniform cubic product with a minimum of slabs or slivers —ideal for aggregate production. This is achieved with correct location of feed opening in relation to centerline of hammer shaft, adjustment angle of breaker plate and relation of offset grate to hammer swing.

For production of crushed limestone and materials of similar abrasiveness the unit is equipped with three rows of hammers. But the hammermill is flexible enough to be changed to a two-row unit and to operate without grates, if necessary, when handling hard or abrasive rock. *Iowa Manufacturing Co., Cedar Rapids, Iowa.*

Enter 106 on Reader Card

New slurry pump

A SLURRY PUMP especially designed to handle abrasive slurries for rock products producers is on the market. Designated as Model 6 RXW, this centrifugal pump is ideal for limestone slurries, sand or industrial silica suspensions and tailings.

Features of the new pump include wider internal volumes, low pressure stuffing box, adjustable rotating elements and renewable liners on both sides of the impeller. Available sizes range from 2 to 6 in. *Morris Machine Works, Baldwinsville, N.Y.*

Enter 107 on Reader Card

(Continued on page 162)

Enter 1017 on Reader Card

another Olin Mathieson packaging product!

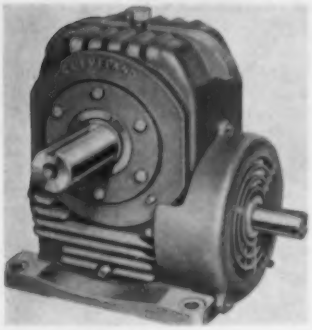
STEPPED-END BAGS

A self-sealing multiwall that stops 'slow leaks'!

Here's a revolutionary new multiwall for shipping powdered, pelletized, and granular materials! A new stepped-end valve and closure design perfected by Olin Mathieson kraft packaging engineers eliminates 'blow-backs' and messy spills during filling, reduces escape of 'fines', speeds your packaging operation, and protects against seepage during shipment! Investigate this new stepped-end feature today... also available in the new Olin Mathieson Skid-Master nonskid bag! Packaging Division, P. O. Box 488, West Monroe, Louisiana.

OLIN MATHIESON • PACKAGING DIVISION

SEE EDWARD R. MURROW ON "SMALL WORLD"—EVERY SUNDAY EVENING. CBS-TV



New reducers

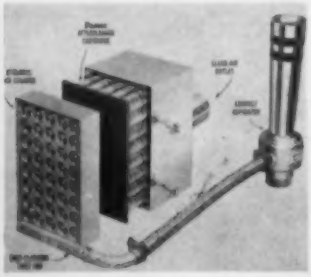
A LINE OF "high-horsepower" worm gear reducers has been announced which offers high ratings in small units. Secret of this achievement is the use of ribbed cast iron housings with integral fan cooling; accurately ground, specially heat-treated alloy steel worms; and high-tin nickel alloy bronze gears cast integrally with an iron hub.

The heat dissipation design often eliminates the restrictions imposed by the thermal rating of the unit and permits the use of smaller housings. Substantially greater input horsepower ratings and output torque ratings are made possible by the precision manufacture of the worms and gears.

First units available are the commonly used ratios in ratings between 1 and 40 hp.; larger sizes are under development. *The Cleveland Worm & Gear Co., 3300 E. 80th St., Cleveland 4, Ohio.* **Enter 108 on Reader Card**

Lower air-cleaning costs claimed for fuel engines

THE NEW ROTOPAMIC AIR CLEANER, said to give well over 99 percent efficiency in diesel, gasoline and LP gas engines, is now in full production.



Most interesting are design features said to cut the cost of maintenance and down-time by more than 80 percent, compared with conventional heavy-duty filter systems.

Key is a self-cleaning first stage which removes all particles over 5 microns through an exhaust-driven aspirator. Thus these larger particles never touch the filter element, boost time between changes of the aftercleaner cartridge to 400 to 1,500 hours. How does one determine when the aftercleaner cartridge needs replacement? This operation is made easy as possible; when the filter service gauge reaches 27 in. wg., a change is indicated.

A case history indicates how effective the unit can be. A portable rock crusher previously required engine overhauls at about 300 to 400 hours. Now, since installation of the Roto-Pamic cleaner, this engine still shows the original hone marks in the liners after 1,700 hours of operation. The changeout period for the paper filter has been 723 hours at the best. Another indication of its acceptance: Eimco Corp. has chosen the Roto-Pamic as standard equipment on its new Model 103. *Farr Co., P.O. Box 90187, Airport Station, Los Angeles 45, Calif.* **Enter 109 on Reader Card**

Throw-away bits

BECAUSE OF THEIR low cost, these new bits can be economically thrown away when worn out. Yet each is fitted with inserts of top quality tungsten carbide.

The new bits are available in three sizes—1⅜, 1½ and 1⅝ in. They can be used interchangeably on the same steel as the maker's all-steel throw-away bits. At the same time, they can be used on any stoper, air-leg or hand sinker drill that uses the dust collecting principle. *Le Roi Div., Westinghouse Air Brake Co., Milwaukee 1, Wis.* **Enter 110 on Reader Card**

Washing plant for small producer

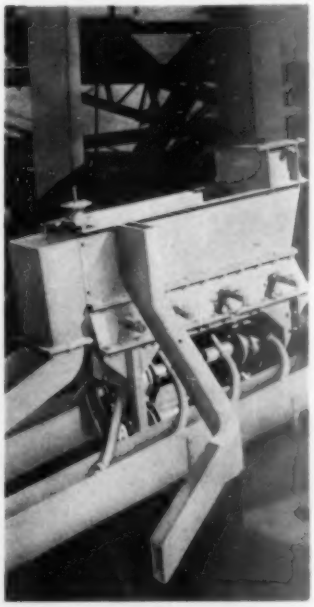
A NEW, LOW COST, good capacity plant for production of washed sand and gravel is now available. Designated Model 402W, the new plant was designed to meet the needs of the small producer just getting started in the washed sand and gravel business. Low initial cost, coupled with low erection and maintenance costs, make the new rig a most economical plant to operate, says the manufacturer.

The plant is ideal for materials that do not require a scrubber and will produce two sizes of gravel, plus oversize and one size of washed sand in the range of 75 to 100 tph. The standard plant consists of a reciprocating plate feeder and feeder conveyor, tandem buzzer-type vibrating screen equipped with spray bar, a single-screw sand classifier and 2 steel storage bins. A pyramidal scalping tank can be added for extra sand production with only a minor modification in the structural supports of the standard plant. Electric motors are used throughout to drive plant components. *Pioneer Engineering Div. Poor & Co., Inc., Minneapolis 14, Minn.*

Enter 111 on Reader Card

Pilot plant jig

THIS NEW MINIATURE jig apparently has all the features which contribute to the high efficiency of larger models of-



fered by the maker. Even with only a 1 x 3½-ft. bed and a capacity between 1 and 3 tph., the machine has a double-stroke jigging action and high frequency pulsation to give better stratification and accelerated settling of fines.

The small jig is offered as a pilot plant machine, but it is useful for production of small tonnages as well as for experimental evaluation of different kinds of gravels. *Western Machinery Co., 650 Fifth St., San Francisco 7, Calif.* **Enter 112 on Reader Card**

(Continued on page 164)

BUCYRUS-ERIE

30-B

SHOVELS

. . . modern machines with all the "old" quality built in!

"They don't build 'em like they used to!" *Oh, don't they!?* Take a good look at the Bucyrus-Erie 30-B shovel. Here's a machine as rugged as any ever built . . . and as modern — with an added tonic of speed, easier controls, and extra stability.

The old ruggedness comes from the 30-B's heavy-duty crawlers and revolving frame. The revolving frame, for example, is a one-piece steel casting with reinforcing ribs to add extra strength where heaviest forces are applied. Compare this to others with light-welded structural frames.

Modern speed comes from the 30-B's clean, efficient power train, and *graduated air controls!* They're used on drum and swing clutches and on the boom hoist to give you just the amount of air — and action — you want *when* you want it.

Get the complete story from your Bucyrus-Erie distributor today, or write to Bucyrus-Erie Company, South Milwaukee, Wisconsin, Dept. 48EA.

BUCYRUS ERIE®

Builds Better Equipment

Enter 1067 on Reader Card

Floating suction strainer

A FLOATING SUCTION strainer meets a long-standing need by users of pumps that draw from streams, tailing ponds and quarry sumps. The new unit solves the problem how to draw water from just below the surface to avoid either sand or silt from the bottom, or floating matter from the surface.

The new strainer, named the Dolphin, promises a solution to the problem of air entrainment in the pump suction due to vortex formation, according to the manufacturer. Extensive tests indicate that the strainer prevents the formation of vortexes by the cylindrical arrangement of the entry holes and because any tendency to vortex formation is automatically countered by a slight sinking of the strainer.

The strainer is light, compact and convenient, and readily fitted to the end of a suction hose. It is made in four sizes, for 1½, 2, 3 and 4-in. hoses. *Megator Pumps and Compressors, Inc., 930 Manchester Ave., Pittsburgh 12, Pa.* **Enter 113 on Reader Card**

Motorized wheel

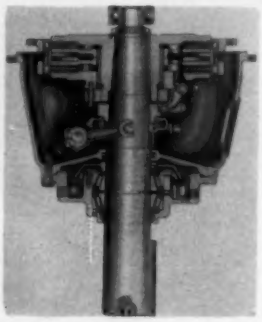
A NEWLY DEVELOPED motorized wheel provides all-wheel traction for trucks, front end loaders and other heavy equipment in the rock products industry. The traction type dc. motor frame supports the weight of the vehicle while the entire motor is mounted within the rim. With the assembly bolted to the side of the vehicle, axles, drive shafts, transmissions and differentials have been eliminated.

Power for the motorized wheel is supplied by a generator coupled to an engine rated at 700 hp. at 2,300 rpm. When braking is needed the wheels act as generators and the power of motion is dissipated as heat in high capacity, air-cooled resistors. An aircraft type disc brake is available as a parking brake or for low speed braking. *General Electric Co., Erie, Pa.*

Enter 114 on Reader Card

Heavy duty clutch

HIGH INERTIA STARTING loads on machinery often damage their prime mover power take-off clutches. Uneven thermal stresses are built up causing minute cracks in the center plate and eventually clutch failure. This new PTO overcomes this problem by means



of an exclusive ventilated center plate, according to the maker. The plate is designed in two sections with diagonal ribs cast into each section. Placed back to back, the ribs cross each other to form only small, diamond-shaped contact areas.

The new power take-off for high energy, high speed applications is designated Model IBF-214P. It is especially suited to rock crushers, conveyors and other equipment that must start under heavy loads. It is said to offer three distinct advantages over standard PTO's: 1) Withstands high-energy heat loads. 2) Can be applied to high-speed engines up to 3,380 input rpm. 3) Operates up to six months between lubrication periods when operated with less than 10 engagements per day. *Twin Disc Clutch Co., Racine, Wis.* **Enter 115 on Reader Card**

100 hp. tractor

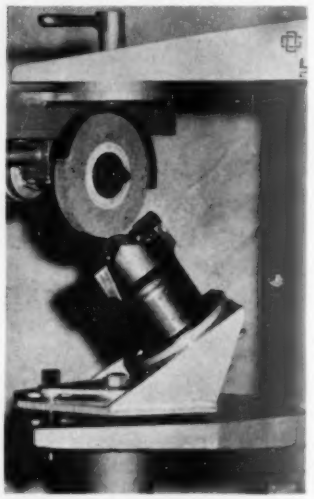
BASIC TRACTOR for a new line of dozers and front end loaders will be rated at 100 hp. Designated the "103 line", the new units will include a number of design innovations—including a heavy duty torque converter, four speeds forward or reverse, self-cleaning air cleaner and massive steel castings in the frame. *The Eimco Corp., P. O. Box 300, Salt Lake City 4, Utah.* **Enter 116 on Reader Card**

Double action bit

A NEW *3*-CONE bit has jet nozzles positioned to direct the drilling fluid against the bottom of the hole so that hydraulic cutting action is developed. These nozzles are an integral part of the bit forging, but inserts of tungsten carbide are available to change the diameter of the stream to suit drilling conditions. The Jet Bit is available in four sizes between 6¾ and 9 in. *Varel Mfg. Co., P. O. Box 13146, Dallas 20, Texas.* **Enter 117 on Reader Card**

Bit grinding fixture

A NEW SELF-CONTAINED fixture is ideal for accurate dressing of detachable drill bits. Heavy welded construction gives ample support for the grinding wheel and bit positioning fixture.

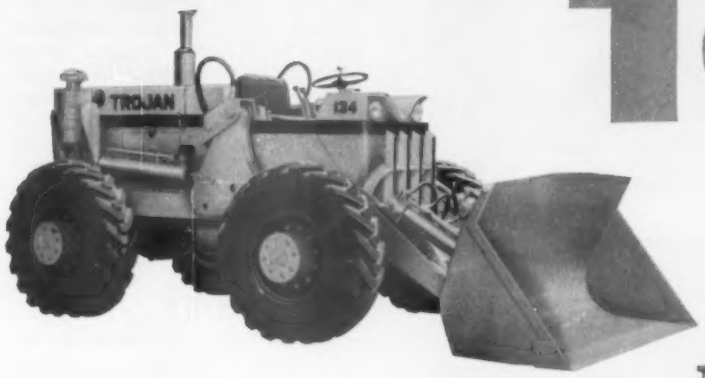


This reduces vibration and makes it easy for the operator to guide the grinder through its controlled swing.

The G6 bit grinder is most useful to sharpen large detachable bits, but it can just as easily be used on small ones. Cross or "X" bits can be handled with a fast, simple fixture for gauge grinding. *Gardner-Denver Co., Quincy, Ill.* **Enter 118 on Reader Card**

(Continued on page 166)

NEWEST 134 IN THE EXPANDING LINE 164



MODEL 134
8,000 LB. CAPACITY

MODEL 164
10,000 LB. CAPACITY

TROJAN makes what it takes for any job!

Now you can bid any size job—secure in the knowledge that this complete Trojan line fits any and all applications. With the introduction of the 134 and 164, both one-machine owners and fleet operators alike may choose from a full working range . . . 1 to 4 cubic yards in lifting capacities from 5,000 to 24,000 lbs. . . . making available to every operator a model precisely matched to his needs . . . Add up the many Trojan benefits and features, you will then see why any one of these models could mean extra profits from the very first working day . . . Put yourself ahead—ask your distributor to demonstrate the Trojan model of your choice.

TROJAN 134

This 1⅓ yard machine, with an 8,000 lb. lifting capacity, has an 8′8″ dump height, 2′5″ forward reach and gas or diesel power.

TROJAN 164

Here is a 1⅔ yard loader with a 10,000 lb. lifting capacity, 8′6″ dump height, 2′9″ forward reach and choice of gas or diesel power.

AD NO. 44-42

The Trojan line includes models with lifting capacities from 5,000 to 24,000 lbs. and bucket capacities from 1 to 4 cu. yds.

THE YALE & TOWNE MANUFACTURING COMPANY
TROJAN DIVISION
BATAVIA, NEW YORK • SAN LEANDRO, CALIFORNIA

TROJAN®
TRACTOR SHOVELS
YALE & TOWNE

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CON-O-WEIGH

the complete control system...

CON-O-WEIGH is a highly accurate continuous belt scale for weighing free-flowing bulk materials. It is engineered as a complete control system for many of industry's most technical feeding, weighing, blending and totalizing operations. CON-O-WEIGH is also widely used for simple weighing and recording routines on a tons-per-hour basis.

For your specific bulk material weighing problem get the facts on this rugged, easy to install machine.

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Salt Lake City, Utah

Specialists in instrumentation, control and automation for milling and smelting. Consulting, engineering, design and installation services for all types of system controls

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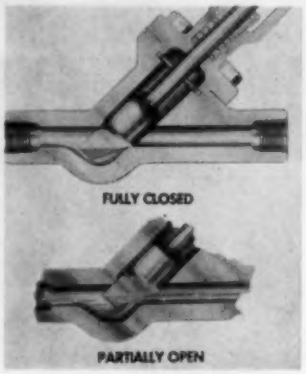
NEW MACHINERY

(Continued from page 164)



Radical new valve

A VALVE OF REVOLUTIONARY new design has been announced. Its maker states that a major breakthrough in valve technology has been achieved. Advantages claimed include ultra-low turbulence, almost negligible pressure drop and friction loss when fully open, and infinitely variable throttling control. The flow of liquid moves through the valve in an unrestricted straight line at all throttling positions.

The new valves are available in carbon steel, stainless steel and bronze, in sizes from ¼ in. to 4 in. and in ratings from 600 to 10,000 psi. A wide range of special modifications to packings, seat and stem is available for unusual applications. *General-American Valve Co., P. O. Box 444, Corona Del Mar, California* ***Enter 119 on Reader Card***

Dual motor vibrator

IDEAL FOR HEAVY DUTY applications requiring continuous flow of heavy bulk materials, this new dual motor vibrator prevents sticking, arching or bridging in lines or chutes. Designated as Model RC2-50, it produces straight line vibration in any direction. The unit operates on a rotating eccentric weight principle and features adjustable eccentrics, permitting force of vibration to be varied without changing weights. There are four contra-rotation weights, two on each motor. Variable impact range is from 640 to 2,200 lb. and any impact change can be made in a matter of minutes. Operation is said to be practically noiseless.

Weight of the new unit is 100 lb. Width is 12⅝ in., length 12 5/16 in., and thickness 7⅛ in. Input is 1,000 watts. Another model is available for 220 v., ac., 3-ph., 60 cy. current. *Cleveland Vibrator Co., 2828 Clinton Ave., Cleveland, Ohio*

Enter 120 on Reader Card

Gravel deposits prospector

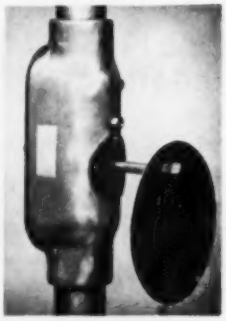
GRAVEL DEPOSITS are quickly located with a new soil survey instrument recently introduced. Earth resistivity surveys may be made quickly by non-technical personnel to provide soil contour profiles that clearly indicate the location, depth and extent of gravel and sand layers. The instrument is portable, weighing only 20 lb., and may be operated by one man.

Designed for use with the Barnes Layer Method, the portable Model 274-M, the Michimho Vibraground, makes earth resistivity soundings over a series of increasing electrode spacings. The resulting data may be used to eliminate costly preliminary test borings. *Associated Research, Inc., 3777 W. Belmont, Chicago 18, Ill.*

Enter 121 on Reader Card

Bin level indicator

AN INDICATOR THAT SHOWS the exact amount of material in a storage bin or silo has been announced. The devices are installed vertically inside



the bin and are connected to lights mounted on the outside. Any type bin can be adapted to use the new units, and the lights can be placed in any convenient location or panel board. No drilling or cutting of the bin is necessary.

The indicator is adaptable as a control unit. It can be wired to stop the loading machinery when the bin is full and to start it when the bin becomes empty. The indicator works equally well with any type and size of material from cement to crushed stone, and can be made explosion-proof. *Linco Products, P.O. Box 144, Massena, N.Y.* ***Enter 122 on Reader Card***

1960 line of trucks

RUGGED DEPENDABILITY and "certified economy" are featured in this 1960 line of heavy and extra-heavy trucks offered to the rock products in-

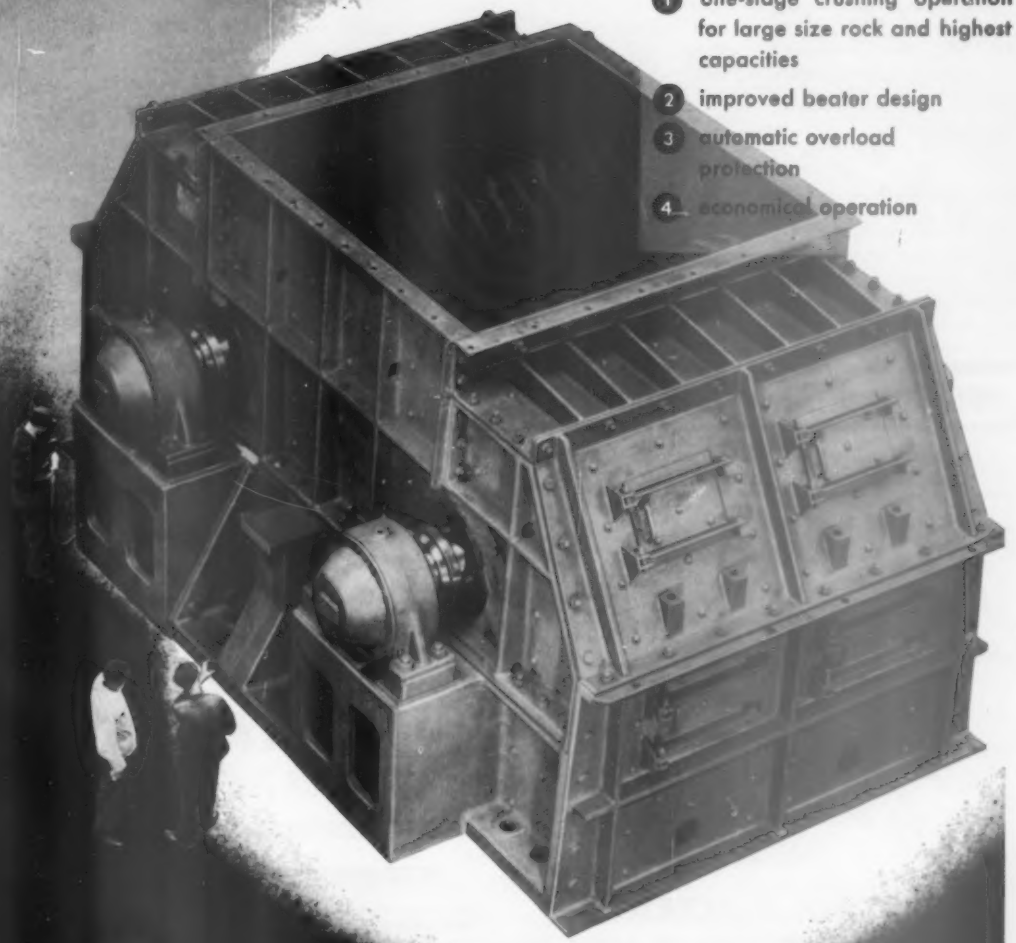
(Continued on page 168)

MIAG

TITAN CRUSHER

For all raw materials
in the cement and gypsum industries

1. one-stage crushing operation for large size rock and highest capacities
2. improved beater design
3. automatic overload protection
4. economical operation



MIAG

BRAUNSCHWEIG (Western Germany)

Agents for

U. S. A.
MIAG NORTHAMERICA, INC.
1616 SO. 8TH STREET
MINNEAPOLIS 4, MINN.

Canada
THE TRIMONT CORP. LTD.
P. O. BOX 25, STATION "H"
MONTREAL, P. Q.

Enter 1097 on Reader Card

(Continued from page 166)

dustry. More than 480 models ranging from 4,600 to 51,000 gvw. are available to meet practically every producer's trucking requirements.

Improved engines power the new trucks. Known as Super-Duty engines, they were specifically designed for rugged service. The 1960 line is said to have greater fuel economy and greater durability than the original engines. Seven of the available power units are V-8 engines ranging up to 270 hp.

Other features of the new trucks include electrically operated fuel pumps, a selection of three new front axles, six rear axles in either single or two speed design and highly durable two-speed axle shift mechanisms. *Ford Motor Co., P. O. Box 608, Dearborn, Michigan.* **Enter 123 on Reader Card**

New core drill

THREE VACUUM suction pads are unusual feature of a newly developed diamond core drilling machine. A vacuum unit develops 2,000 lb. holding-power in the pads to anchor the machine to the porous or irregular surfaces encountered in most formations.

This new machine can be set up by one man in less than a minute, according to the manufacturer. It weighs less than 150 lb. and can drill ¼ to 4-in. cores between 1 and 4 in. per min. Credit for this speed is given to the vacuum mounting which provides great stability for the unit and great downward pressure. *Diamond Core & Saw Div., Portomag, Inc., 1521 E. Nine Mile Rd., Ferndale 20, Mich.* **Enter 124 on Reader Card**

Excavator-crane

A NEW EXCAVATOR-CRANE called the Type M features an all-vision cab and a number of new design elements. On rubber, the unit has a 20-ton lifting capacity and is available with a heavy or light truck mounting. Low axle load distribution will allow highway travel in most states without a permit.

Features of particular importance to truck-crane owners are counterweight removal by gantry, removable outriggers, pin (folding) boom, pendant cables, floating bridle tie-down to boom and torque converter or fluid coupling or 2-to-1 reduction transmission at motor to decrease load-line speed.

On crawlers, the Type M is rated as a 15-ton crane or a ¾-cu. yd. ex-

(Continued on page 171)

BETTER WELDS | SMOOTHER, EASIER APPLICATIONS | ADDITIONAL SAVINGS | BETTER WEAR RESISTANCE

ENGINEERED TOUGHNESS

S-3
30
48
55
65
M-14

A royal proclamation by REXARC "KING OF THE ARC"

presenting:
SIX ELECTRODES
TO COVER 95% OR MORE OF
YOUR BUILDUP AND HARD-FACING REQUIREMENTS

EACH IN FOUR SIZES

Contact your nearest distributor, or the factory direct, for free 20-page manual

METALLIC COATING BECOMES A PART OF THE DEPOSIT!

MANUFACTURED BY
The SIGHT FEED GENERATOR COMPANY
WEST ALEXANDRIA, OHIO, U.S.A.

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PRINCIPAL ADVANTAGES

1. Rugged construction and slow speed insure utmost dependability and minimum maintenance.
2. Whizzer separator gives a wide range of fineness with finger-tip control.
3. Automatic feed control assures maximum capacity — with only part of one man's time required for the mill operation.
4. Combined operations of pulverizing, classifying and conveying offer economies and simplification in plant design.
5. Flexibility of layout.
6. Dust-free operation.

For further details, write for the Raymond Roller Mill Catalog #79.

THIS huge 66" Raymond Roller Mill is the *heart* of the modern equipped plant of the Federal Foundry Supply Division of Archer-Daniels-Midland Company at Colony, Wyoming.

The raw bentonite is first reduced in a slicer ahead of an 8' diameter by 60' long rotary dryer where the moisture is reduced from 30% down to 8%-10%.

The Raymond Roller Mill then pulverizes, classifies and conveys the finished material to storage silos, where the product can go to bag packers or bulk loaders.

This Super Roller Mill has a rated capacity of 500 tons per day at a fineness of 90% minus 200 mesh. It can produce various grades, with classification easily controlled over a wide range.

Archer-Daniels-Midland Company has incorporated automatic control features in the system to permit operation of the entire plant by two men on a shift.

COMBUSTION ENGINEERING, INC.

Raymond Division

1108 W. BLACKHAWK ST.
CHICAGO 22, ILLINOIS

Combustion Engineering-Superheater Ltd., Montreal, Canada

SALES OFFICES IN PRINCIPAL CITIES

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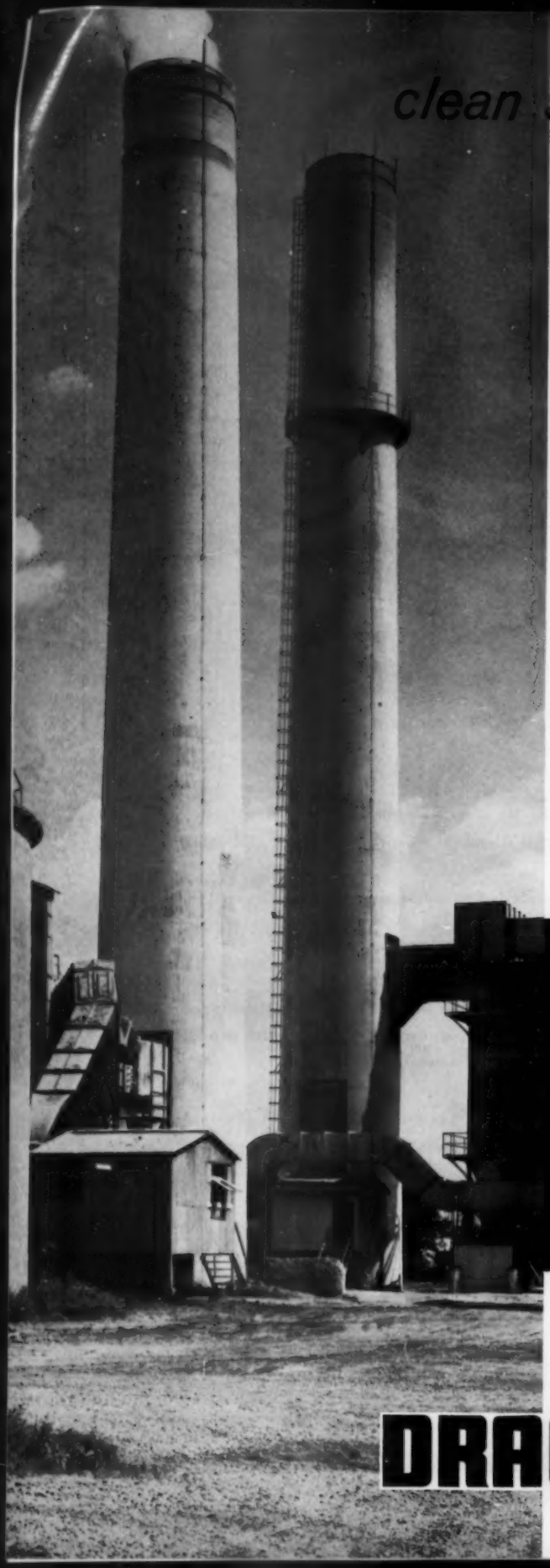


clean stack at Dragon Cement!

DRACCO GLASS-BAG FILTER HALTS AIR POLLUTION BY COLLECTING KILN DUST AT 600° F.

The unretouched photograph shows the dramatic result produced by a Dracco Glass-Bag Filter at Dragon Cement Co., division of American-Marietta Co., Northampton, Pa.

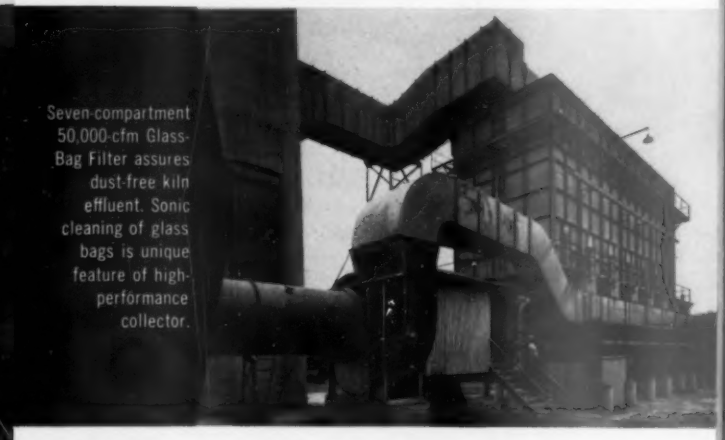
The kiln is running at full capacity—but no visible dust is escaping from the stack connected to the Glass-Bag Filter. The filter is collecting the extremely fine dust with virtually 100% efficiency. Duplicate equipment has been ordered to eliminate visible dust from the other stack.

Convinced that this is the best answer to air pollution from kiln stacks, Dragon has ordered three more Glass-Bag Filters. Soon all stacks will be clean at Dragon!

Exclusive dust removal techniques assure extra-long bag life. At Dragon, Dracco's patented SONOCLEAN unit safely cleans the bags with sonics. Sound waves gently dislodge dust without wear or fracture of the cloth.

Modular, compartmented design gives flexibility to meet any capacity requirement and simplifies servicing. Worker comfort during servicing is assured by interior insulation.

Dracco Glass-Bag Filters, the first successful glass cloth collectors, are now collecting hot, corrosive dust and fumes in many industries—cement, chemical, metallurgical. Gases to 600° F. can be introduced into the filter where specially treated glass bags retain all visible dust.



Seven-compartment 50,000-cfm Glass-Bag Filter assures dust-free kiln effluent. Sonic cleaning of glass bags is unique feature of high-performance collector.

For further information on Glass-Bag Filters, today's most advanced equipment for air pollution or hot dust problems, contact: Dracco Division of Fuller Company, Harvard Avenue and E. 116th Street, Cleveland 5, Ohio.

DRACCO *airstream* conveyors
dust control equipment

FULLER COMPANY

(Continued from page 168)

cavator. Standard 12 ft. 6 in. crawlers can be equipped with 24 or 30-in. shoes. A new wide, deep carbody is standard equipment on the Type M. Crawlers have self-cleaning treads and tumblers, double-faced crawler rollers and heat-treated shoes. Sealed crawler rollers and end tumblers are available as optional equipment.

Turntable is 63 in. diam. and has a heat-treated roller path and internal bullgear. Rear hook rollers and front load rollers are antifriction bearing mounted. *Insley Corp., P.O. Box 167, Indianapolis 6, Ind.*

Enter 125 on Reader Card

300-hp. loader

THIS NEWEST "PAYLOADER" is powered by a turbo-charged diesel engine which develops 300 hp. at 2,100 rpm.

The manufacturer's recommended load "carry capacity" for the Model H-120 is conservatively rated at 12,000 lb. Buckets from 3 to 6 cu. yd. are offered for handling various materials where the total load falls within the carry capacity range.

The maximum height of raised bucket is 9 ft. 2½ in. With the bucket dumped at 50 deg., clearance under the bucket edge is 10 ft. 10 in., and the forward reach from the front tire is 3½ ft.

The H-120 features a four-speed, forward and reverse, power-shift transmission and matched torque-converter which provides travel speeds up to 28 mph. Other features include the use of a filtered air cleaner which removes up to 99.8 percent of the dust and dirt. Service time is reduced, and this cleaner operates at maximum efficiency regardless of changes in engine speed, temperature or dust accumulation. *The Frank G. Hough Co., 705 Seventh St., Libertyville, Ill.*

Enter 126 on Reader Card

Turbo-charged engine

A 360-HP. DIESEL adds a new high to the horsepower range of the manufacturer's line of single engines for industrial applications. The new engine is a Series 110 model in which a 20-percent gain in horsepower is attained through turbocharging. *Detroit Diesel Engine Division, General Motors Corp., Detroit 28, Mich.*

Enter 127 on Reader Card

ARE YOU PLANNING?

A NEW PLANT

MODIFYING AN OLD PLANT

EXPANDING

MAINTENANCE OF EXISTING UNITS

REPAIR OF EXISTING EQUIPMENT

Erectors and Riggers, Inc. are specialists in *Cement, Lime* and *Gypsum* plant installations with a record of over 65 installations in the last 8 years from Picton, Ontario, Canada to Mexico.
For bidding or appropriation estimates we have complete cost records for any of the above listed work. *Write, Phone,* or send Reader Service Card for full information:

ERECTORS & RIGGERS, INC.
6602 Long Drive Olive 4-2638
Houston 17, Texas

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MEMO

To PRODUCERS

Just checking . . . . have you noticed the advertisements which apply to your operation?
ROCK PRODUCTS' Advertisers regularly keep you well informed concerning both new equipment and processes.
Why not glance through this issue again to make sure nothing of importance to your business has missed your attention.

Enter 1064 on Reader Card

MANUFACTURERS NEWS

J. I. Case Co. names division manager

DONALD H. MITCHELL has joined the J. I. Case Co., Racine, Wisconsin, as manager of newly-formed Industrial Products Division. In his new post, Mr. Mitchell will be in charge of product training, sales training, market analysis and dealer training.

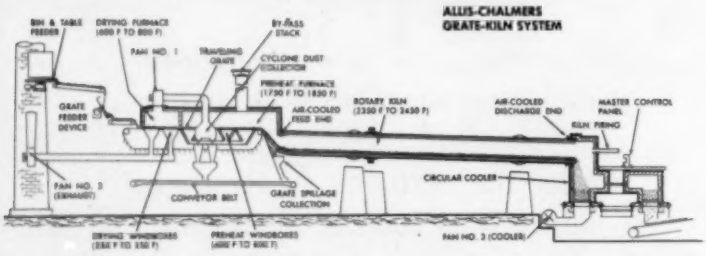
The new manager is a 1949 mechanical engineering graduate of Purdue University. He joined J. D. Adams Co., where he eventually became district manager for the East Central area. When Adams merged with LeTourneau-Westinghouse Co., Mr. Mitchell was placed in charge of sales training. He left this post to become district representative in the Carolinas and Virginia and rose to Eastern Sales Manager after 18 months.

S. W. Brock, formerly sales representative of the Case Clausen Works in Racine, will be assistant manager of the new division and directly responsible for product training, including the school for demonstrators, district representatives and dealer personnel. G. W. Watts will be in charge of technical information.

Owens named sales manager

DAVID OWENS, former foreign sales manager of the Pennsylvania Crusher Division of Bath Iron Works, has been appointed sales manager in the company's main office in West Chester, Pa. A graduate engineer, Mr. Owens spent eight years as a sales engineer with Allis-Chalmers prior to joining the W. R. Grace & Co. in 1954.

A-C grate-kiln plant begins agglomeration tests



THE ALLIS-CHALMERS process pilot plant at Carrollville, Wisconsin, is conducting an extensive research program in testing raw materials. Silicious bauxite, magnesite, cement, phosphate ores, dolomite and limestone are included in the scheduled study on both process and economic levels.

A model of the double-pass grate-kiln system is being used by development engineers for these three major considerations:

1. to demonstrate the feasibility of agglomeration (pelletizing) processes for a wide range of raw materials;

2. to determine variations in operating conditions;

3. to develop and study techniques required for handling, preparing and processing the test materials.

These intensive studies are conducted with multi-ton samples of minerals and ore concentrates sent to the company by various industries from operations throughout the Western hemisphere, parts of Europe and Asia.

Morris to build new, modern plant

MORRIS MACHINE WORKS, Baldwinsville, N.Y., has revealed plans to construct a ½ million dollar modern industrial plant on its present building site. The new one and two-story building is scheduled for completion in spring 1960, and will provide nearly 60,000 square feet of space for production and administrative offices. The two-story facade facing the street is to be white glazed brick and aluminum window-wall.

The company hopes for considerable savings through use of the modern, functionally designed plant, especially reduced maintenance and more efficient material flow. A unique feature of the building will be its high-voltage lighting system providing maximum illumination throughout the manufacturing area and eliminating individual machinery lights.

Allen named director of engineering at HR

ROBERT R. ALLEN has been appointed director of engineering, research and development of Hewitt-Robins, Inc., Stamford, Conn. Mr. Allen, a mechanical engineering graduate of Ohio State University, was formerly vice president of engineering and research at the John Wood Co., New York.

(Continued on page 174)

SYNTRON Vibra-Flow VIBRATORY FEEDERS

for dependable, controlled high rate feeding of rock, aggregate and sand at low cost

SYNTRON Vibratory Feeders will feed rock, aggregate, sand and other bulk materials efficiently and economically at rates from pounds to thousands of tons per hour.

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—operation and maintenance economy. SYNTRON Feeders contains no mechanical wearing parts—require no lubrication or periodic adjustment.

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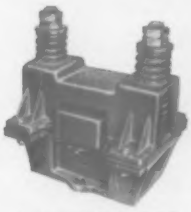

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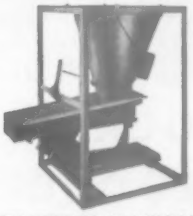

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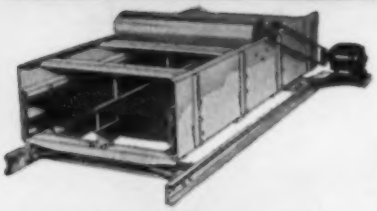

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Why not pass along the form to people you think should be reading ROCK PRODUCTS every month.

(Continued from page 172)

Hough names Hunsaker

DAVID D. HUNSAKER is new manager, sales development, for the Frank G. Hough Co., Libertyville, Ill. He will be responsible for sales engineering, training aids, product knowledge and merchandising programs. The post is newly created.

Mr. Hunsaker formerly was a district manager and has been with Hough for almost 14 years.

A-C pump catalog available to companies

ALLIS-CHALMERS is making its centrifugal "Pic-A-Pump" catalog available to company representatives. Requests must be directed to Allis-Chalmers district offices or distributors and written on company letterheads.

The 576-page catalog contains engineering data arranged for convenient selection of pumping units and materials of construction to meet specific application. Many hundreds of pump types, models and sizes are carried, along with price listings.

Bartlett-Snow acquires entire Wettlaufer line

C. O. BARTLETT & SNOW CO., Cleveland, Ohio, has acquired the entire Wettlaufer line of vibrating screens, packing units, blender mixers, granulators and centrifuges.

With this addition to its product line, Bartlett-Snow can provide equipment for drying, calcining, reducing, screening, mixing and conditioning an extremely wide range of materials. Both production equipment and laboratory size units for research or pilot-plant are included.

The Wettlaufer equipment embodies new principles developed specifically to solve processing problems. Screening developments include horizontal conveyor-action screens, dual powered screens with two eccentric shafts, and screens which vibrate on rubber-tubing supports.

Truck conversion to Diesel successful

DETROIT DIESEL ENGINE Division, General Motors Corp., reports that a leading gravel contractor in Minnesota has converted his first 10-cu. yd. dump truck from gasoline to diesel

power with good results. Now several other gravel producers in the area are considering diesel engines for their small trucks. The tandem-axle converted truck, rated at 39,000 lb. gvw, is one of a fleet of dump trucks owned by the Fischer Construction Co. of Farmington, Minn. It is currently operating in Minneapolis-St. Paul area, where the use of gravel is at an all-time high.

The conversion job involved repowering a 1957 truck with a four-cylinder model of General Motor's new line of diesel engines. The "53" engine in this instance replaced a 308 cu. in. displacement gasoline engine of comparable size and weight. Interstate GM Diesel, Inc., of Minneapolis, distributor of GM Diesel engines in Minnesota, made the conversion.

The converted unit has averaged 9½ hours of road service per day hauling gravel from Fischer Co. pits to construction sites, asphalt and concrete plants in the Twin-Cities area.

The conversion was accomplished with no major changes in truck design. Radiator and frame remained standard and the existing torque converter and rear axle assembly were used. Operating controls inside the truck were left unchanged and contribute to easy operation and driver control.

Oliver World Congress

MORE THAN 80 OLIVER foreign distributors from Arabia to Venezuela were introduced to Oliver Corp.'s line

(Continued on page 176)

Enter 1058 on Reader Card

At Keystone Portland Cement Company's Bath, Pa., quarry, this Mack LVX takes on one of the fifty 22-ton loads it must haul each day to keep on schedule.

A 15% grade has to be tackled on the mile-long round trip from shovel to crusher. This Mack hustles up-grade with a full payload while its empty companion barrels back down to the shovel.

Our MACKS stay on the job

Round-the-clock feeding of the crusher is one phase of cement-plant operations that can't fall behind.

Keystone Portland Cement Co., Bath, Pa., expect each of their trucks to deliver 800 tons of rock per 7-hour shift . . . and do it at lowest cost. They get the job done with Mack 22½-ton LVX dumpers—fast, reliably and with surprising fuel economy.

Quarry Superintendent Harry Michaels says, "Our Macks give us top on-the-job performance, taking time off only for routine maintenance. They keep working day after day, month in, month out."

Why not team up *your* big shovels with Mack trucks? They'll make fast hauls between quarry and crusher. They can be depended upon to meet scheduled tonnage requirements because Macks don't bog down or break down when the going gets rough . . . handle easily the heaviest loads under the most demanding conditions.

Whatever your requirements, your Mack branch or distributor has full details on the Mack off-highway dumper that will do the job better and more economically. Mack Trucks, Inc., Plainfield, New Jersey. In Canada: Mack Trucks of Canada, Ltd., Toronto, Ont.

MACK
FIRST NAME FOR
TRUCKS

(Continued from page 174)

of industrial equipment. Valued at more than $1 million, the machinery was assembled at the Hawthorn-Mellody Farm, 30 mi. north of Chicago.

Included in the displays and full-scale demonstrations were 83 wheel and crawler tractors ranging from a 30-hp. unit to a huge 161-hp., dual-diesel machine.

Because of the importance of financing foreign equipment sales, officials from Mexico, Cuba and Puerto Rico observed the demonstrations. In addition, government observers were present from several countries.

Alloy Rods creates hard surface division

ALLOY RODS CO. has announced the organization of a Hard Surfacing Division to be operated as a separate sales group for the company. Einar Iverson of the company's Chicago office has been named manager of the division.

E. R. Walsh, vice president in charge of sales, outlines the firm's rapid growth in the field of hard surfacing as the principal reason behind the move. This growth was attributed to the development and introduction of the firm's feed unit and wires for semi-automatic hard surfacing.

Manager Iverson is a graduate of Rensselaer Polytechnic Institute.

Hyster Co. appoints general sales head

ROBERT F. MOODY, who for the past several years has been sales manager of Hyster Co.'s industrial truck division, has been named general sales manager. Mr. Moody will move from his Danville, Illinois, headquarters to the Portland, Oregon office of the firm.

The new position gives Mr. Moody the responsibility for sales activities, including promotion, merchandise and special products engineering departments for the firm.

Equipment sales boom

FIFTEEN OF 21 equipment makers surveyed by *Engineering News Record* reported first half sales higher than last year and only one showed a deficit for the half. However, few of the companies equalled profit margins reported in prosperous 1956 and 1957, the construction weekly reports.

Very encouraging is the term for the outlook through mid-1960, the equipment firms report. A surge in new orders is expected during the present quarter, and it should continue through next summer. New orders in the first half of 1960 should be eight percent above the record amount booked in the same period this year, McGraw-Hill's department of economics reports. However, the highway picture will acutely affect construction equipment sales, the article concludes.

Slurries...handled at lower cost

The new WILFLEY MODEL K Centrifugal Sand Pump embodies important mechanical improvements especially adapted to the handling of cement slurry and results in stepped-up production and substantial power savings. Individual engineering. Write for details.

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A. R. WILFLEY and SONS, Inc.
Denver, Colo., U.S.A.

WILFLEY centrifugal PUMPS

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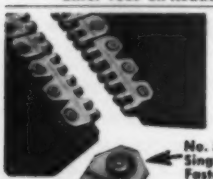
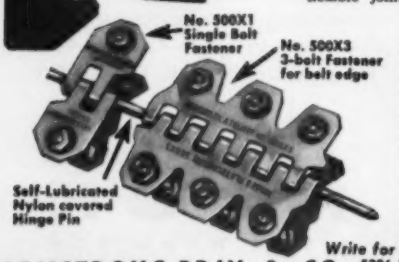


New HINGED PLATEGRIP

Recommended for mines, quarries, construction work, storage yards—wherever belts length must be frequently changed. Hinged Plategrip Fasteners make a strong, flexible joint in heavy duty conveyor belts, trough naturally, ride smoothly over pulleys, yet can be separated by simply pulling the hinge pin. *Improved* design takes the new smaller diameter self-lubricating nylon sheathed cable hinge pins. No. 500X1 single bolt fasteners and No. 500X3 3 bolt fasteners (used at outside edges) to reinforce edges and aid troughing:



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- 1—Barber Green Model 82A crawler type car loader
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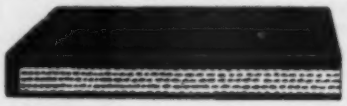

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14"	4	$3.78	$2.94
16"	4	4.24	3.09
18"	4	4.69	3.42
20"	4	5.17	3.95
24"	4	6.08	4.43
30"	4	7.47	5.42
36"	4	8.85	6.43

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Width	Top Cover	Bottom Cover	List Price Per Foot	Sale Price Per Foot
14"	1/16"	1/32"	$ 4.35	$3.09
16"	1/16"	1/32"	4.92	3.49
18"	1/16"	1/32"	5.45	3.87
20"	1/16"	1/32"	5.97	4.41
24"	1/16"	1/32"	7.03	4.99
30"	1/16"	1/32"	8.62	6.13
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THE FOLLOWING BELTS ARE 5 PLY, 32 OZ. DUCK				
24"	1/16"	1/32"	9.17	6.68
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36"	1/16"	1/32"	15.23	11.09

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16"	4	5.04	3.60
18"	4	5.61	3.98
20"	4	6.14	4.54
24"	4	7.22	5.14
30"	4	8.87	6.31
36"	4	10.49	7.64
24"	5	8.47	6.01

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18"	4	6.34	4.37
20"	4	6.95	4.98
24"	4	8.18	5.63
30"	4	10.09	6.92
24"	5	9.47	6.56

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2—Allis Chalmers TS-360, 15-yd. overhung engine scrapers.
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2—Euclid 12-yd. overhung engine scrapers.
1—Euclid 7-yd. overhung engine scraper.
1—Caterpillar 80 tractor-drawn scraper.

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Osgood 903, 2-yd., 24' boom, 20'6" stick.
Lorain 26, 3/4-yd., 19' boom, 16' stick.

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1—Rennenberg 5'6" x 50', 3/8" shell.
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22B Kennedy Van Saun 12, 37½, 38, 49¼"
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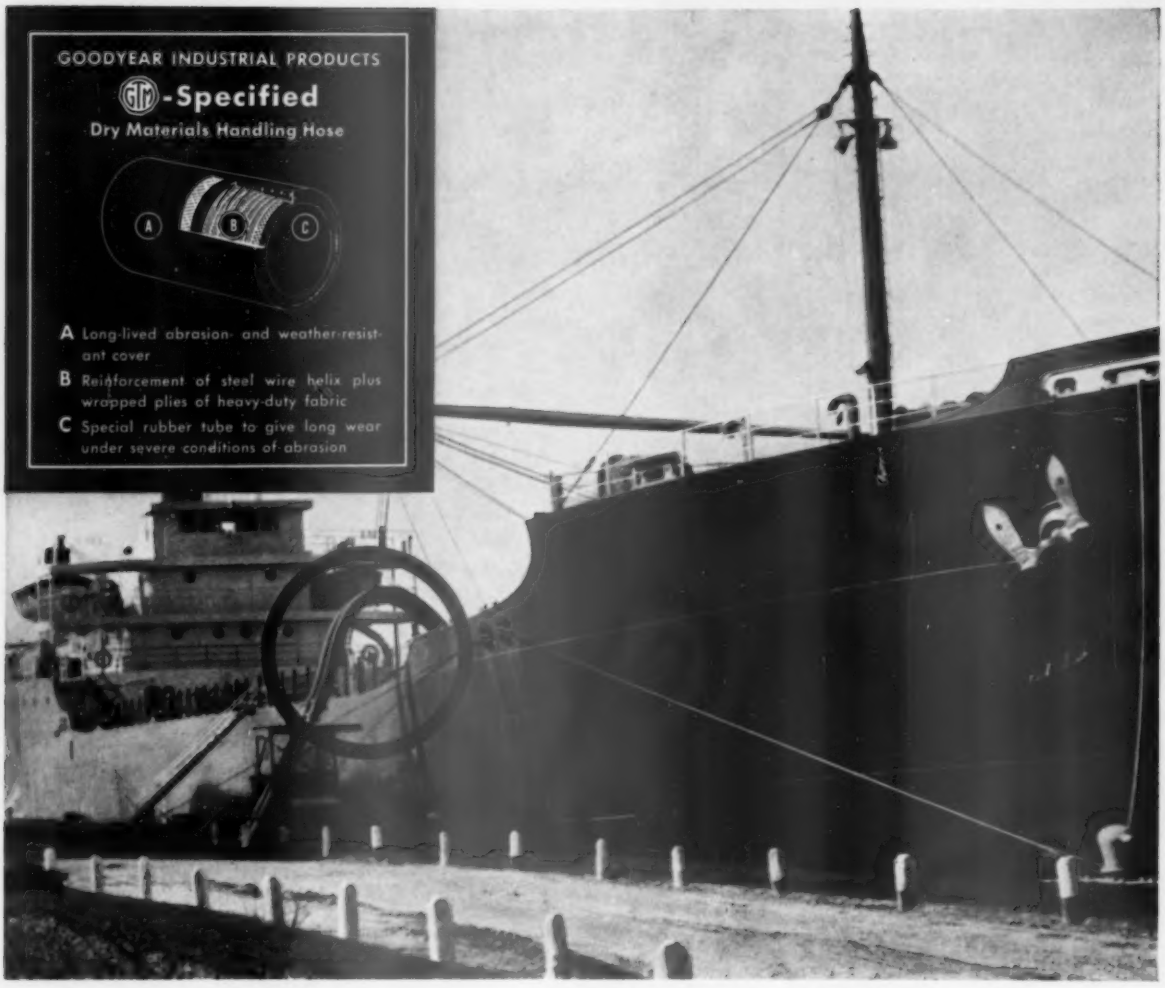
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